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REPORT

OF THE

SELECT STANDING COMMITTEE

ON

AGRICULTURE AND COLONIZATION

THIRD SESSION, ELEVENTH PARLIAMENT

1910-11

PRINTED BY ORDER OF PARLIAMENT



OTTAWA

PRINTED BY C. H. PARMELEE, PRINTER TO THE KING'S MOST
EXCELLENT MAJESTY

1911

[App. No. 1—1911]

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THE COMMITTEE.

(M. S. SCHELL, Esq., *Chairman.*)

Messieurs :

Ailard,	Herron,	Owen,
Allen,	Hodgins,	Paquet,
Armstrong,	Hughes,	Parent,
Arthurs,	Hunt,	Pickup,
Beauparlant,	Jameson,	Proulx,
Béland,	Kidd,	Rankin,
Best,	King,	Richards,
Black,	Lafortune,	Robb,
Blain,	Lake,	Roche,
Blondin,	Lalor,	Ross (<i>Rimouski</i>),
Boyer,	Lancôt	Ross (<i>Middlesex</i>),
Bradbury,	(<i>Laprairie-Napierville</i>),	Russell,
Broder,	LeBlanc,	Rutan,
Brown,	Lennox,	Savoie,
Burrell,	Lewis,	Schaffner,
Campbell,	Lortie,	Schell,
Carrier,	Lovell,	Sealey,
Carvell,	Low,	Seguin,
Cash,	Macdonald,	Sexsmith,
Champagne,	MacNutt,	Sharpe (<i>Lisgar</i>),
Chew,	McAllister,	Sharpe (<i>Ontario</i>),
Chisholm (<i>Antigonish</i>),	McCall,	Sinclair,
Chisholm (<i>Huron</i>),	McCarthy,	Smith (<i>Middlesex</i>),
Chisholm (<i>Inverness</i>),	McCoig,	Smith (<i>Nanaimo</i>),
Clare,	McCull,	Smith (<i>Stormont</i>),
Clark (<i>Red Deer</i>),	McIntyre,	Sperry,
Conmee,	McLean (<i>Huron</i>),	Sproule,
Currie (<i>Prince Edward</i>),	McMillan,	Stanfield,
Currie (<i>Simcoe</i>),	Madden,	Staples,
Delisle,	Magrath,	Stewart,
Devlin,	Major,	Talbot,
Donnelly,	Marcile (<i>Bagot</i>),	Thornton,
Douglas,	Marshall,	Tobin,
Ecrément,	Martin	Todd,
Edwards,	(<i>Montreal, St. Mary's</i>),	Tolmie,
Elson,	Martin (<i>Wellington</i>),	Turcotte (<i>Nicolet</i>),
Ethier,	Mayrand,	Turgeon,
Fisher,	Meighen,	Turriff,
Fraser,	Meigs,	Verville,
Gauvreau,	Middlebro,	Wallace,
Gilbert,	Miller,	White (<i>Renfrew</i>),
Girard,	Molloy,	Wilson (<i>Laval</i>),
Gordon (<i>Kent</i>),	Monk,	Wilson (<i>Lennox and</i>
Gordon (<i>Nipissing</i>),	Nantel,	<i>Addington</i>),
Harris,	Neely,	Wilcox,
Henderson,	Oliver,	Wright.

THE UPBUILDING OF AGRICULTURE IN CANADA

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34.

WEDNESDAY, December 14, 1910.

The Select Standing Committee on Agriculture and Colonization met this day at 11 o'clock, A.M., the Chairman, Mr. M. S. Schell, presiding.

THE CHAIRMAN.—Gentlemen, the hour has come for us to commence our session. We are pleased to have with us again this morning, Dr. Wm. Saunders, Director of Dominion Experimental Farms. He has frequently been before us in connection with this work, and his addresses have invariably been not only full of information, but of great value to the agriculturists of this country. The best monument, I think, which will ever be erected to his name will be the work he has been the means of carrying along so successfully in connection with the Experimental Farms of Canada. I suppose there has never been a time in the history of the Dominion, or of the world at large, when there has been so much interest taken in the advance of agriculture—in the most scientific methods and in everything that pertains to the largest possible development of our agricultural resources—as there is to-day. Whether it is our bank managers, the heads of the great railroad corporations, the business men of the country, or the farmers themselves, I do not think there has ever been as much interest taken in scientific agriculture and everything that makes for progress and development in that particular branch of our national life, and the work that Dr. Saunders and other men of similar character have performed, has conduced largely to this increased inquiry and interest in the advance of agriculture. We are pleased to have him with us again this morning, and I am sure he will receive a most attentive hearing.

DR. WM. SAUNDERS.—Again I have the opportunity of appearing before the Select Standing Committee on Agriculture and Colonization. This, I believe, is my twenty-fourth annual appearance before this committee, having enjoyed the privilege of being called before you each year for the past twenty-four years. For many years past my story has been one of agricultural progress and of the rapid upbuilding of that great agricultural industry of which we are all so proud and concerning which Canada is now so widely and so favourably known.

It has always seemed to me a marvel that this country has been able to maintain so high a reputation and make such wonderful progress and such substantial growth, when we consider the quantity of poor material which immigration has brought to our doors within the past years. While we have had many thousands of good, practical and well-informed farmers cast in their lot with us, men who are devoting their knowledge and skill to the work of making this a good agricultural country, we have, at the same time, had many more, largely from Europe, who have brought with them little or no knowledge of agriculture and who have almost everything to learn. The reputation of this country as an attractive and promising home for the industrious farmer must necessarily be built up from the average results

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obtained from this mixture of men of inferior intelligence with superior men. The substantial crops which have been harvested on these lands in spite of the drawback of much inferior farming, have been such as to fully establish the claims made of their high fertility and great crop producing power. Most of the settlers on these fertile lands are striving to learn and are every year becoming more competent as practical farmers, and are very thankful for any kindly advice they can get from those who have received better training.

Still, in recording the average grain crops in any district, the lighter yields got by many of the poorer farmers must, for a considerable period yet to come, reduce the average to a much lower figure than it would otherwise stand at if the farmers in such localities were all possessed of a good knowledge of their business.

SOME OF THE CROPS OF THE YEAR.

In the final estimate of crops given in the Census and Statistics Monthly, the wheat crop of Canada is given as follows:—Spring wheat, 133,379,600 bushels; fall wheat, 16,610,000 bushels, a total of 149,989,600 bushels, with an average yield for the whole Dominion of 16.14 bushels per acre. Of oats, the total yield was 323,449,000 bushels, with an average yield per acre of 32.79 bushels; and of barley, 45,147,600 bushels, with an average yield of 24.62 bushels per acre, making a total for wheat, oats and barley of 518,586,200 bushels. These final reports show a decrease as compared with the final reports of last year. In spring wheat there is a falling off of 17,269,400 bushels; in the total crop of oats of 30,017,000 bushels, and in that of barley 10,250,400 bushels.

These reductions in crop have occurred mainly in the western provinces, and have been chiefly due to the great drought which prevailed over a large area in the Canadian Northwest during the greater part of the growing season of 1910.

The eastern provinces had exceptionally fine weather, and the crops have been bountiful and the quality of the products excellent. These provinces show gains in two of the crops to which I have referred, namely, wheat and oats. The increase in wheat in the eastern provinces is placed at 1,836,600 bushels; the increase in oats, 28,669,000 bushels, while there is a decrease in the crop of barley of 269,400 bushels.

By Mr. Best:

Q. What method have you of finding out the average of the different crops?

A. Our information is obtained through the Bureau of Statistics, a branch of the Department of Agriculture, which has very extensive machinery for compiling these results. Information is got from every quarter of the Dominion, and it is compiled in their office.

By Mr. Wilson (Lennox and Addington):

Q. Is that estimate made by the different provinces?

A. The figures I am giving you are entirely from the Bureau of Statistics of the Dominion Department of Agriculture.

In other crops, especially important in the east, the returns have been most gratifying. The hay crop will total about 15,291,000 tons, the market value of which, computed at the local prices this year, will be \$147,287,000. Much of this hay, which is of first quality, will be required for the building up of the stock industry. This excellent fodder material will be supplemented in the provinces east of Manitoba by a large crop of turnips and of other field roots of an estimated value of \$20,618,000, also by a yield of fodder corn of 2,551,000 tons, valued at \$11,957,000. The total value of the hay, field roots and fodder corn is \$179,862,000, being about \$17,000,000 in advance of last

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year. Such substantial returns to the farmers of Eastern Canada will provide means for a healthy growth in all branches of agriculture and must prove a stimulus to agricultural progress.

While all the eastern provinces have shared in the prosperity which a good harvest has brought about, Ontario, with the large area of land under crop, always occupies a position of prominence. While the increase in the total crop of wheat in Ontario in 1910 amounts to 1,543,000 bushels, the yield per acre of spring wheat rose from 17.45 bushels in 1909 to 20.19 in 1910; winter wheat from 24.24 to 25.24 bushels per acre, while the increase in the oat crop in 1910 was 19,725,000 bushels, with an average yield per acre of 39.40 bushels, as compared with 34.75 bushels in 1909. There was a slight decrease in the total crop of barley of 225,000 bushels, due to a smaller acreage being sown; the average yield per acre, 29.75 bushels, being slightly greater than that of the previous year, 29.04. Of corn for husking, which is grown mainly in Essex, Lambton, Kent and Elgin, and which covered an area in 1910 of 299,040 acres, there was produced 17,853,000 bushels. The yield per acre increased from 56.91 to 59.7 bushels. This compares very well with the corn area in the United States, which gave a yield of 27.4 bushels per acre. The increase in the production of hay in Ontario is perhaps the most important item we have yet enumerated, the increase amounting to 1,976,000 tons with an estimated value of \$8,197,000.

YIELDS OF PRINCIPAL CEREAL CROPS IN EACH PROVINCE FOR YEARS 1909 AND 1910.

In the following table the particulars of the yields of the principal cereal crops in each province are given for 1909 and 1910:—

	Yield per acre, 1909.	Total Yield, 1909.	Yield per acre, 1910.	Total Yield, 1910.
	Bush.	Bush.	Bush.	Bush.
<i>Prince Edward Island—</i>				
Spring wheat.....	20.00	522,000	20.52	615,600
Oats.....	33.70	6,201,000	36.48	6,778,000
Barley.....	27.61	169,000	28.00	159,600
<i>Nova Scotia—</i>				
Spring wheat.....	19.80	404,000	22.85	480,000
Oats.....	31.56	4,353,000	39.52	5,723,000
Barley.....	24.77	221,000	30.33	264,000
<i>New Brunswick—</i>				
Spring wheat.....	20.15	395,000	19.03	371,000
Oats.....	27.87	5,775,000	29.69	6,351,000
Barley.....	29.26	94,000	35.29	73,000
<i>Quebec—</i>				
Spring wheat.....	16.71	1,679,000	18.38	1,827,000
Oats.....	27.00	42,501,000	29.66	48,927,000
Barley.....	24.02	2,604,000	24.49	2,547,000
<i>Ontario—</i>				
Spring wheat.....	17.45	2,176,000	20.19	2,429,000
Winter wheat.....	24.24	14,086,000	25.24	15,376,000
Oats.....	34.75	109,192,000	39.40	128,917,000
Barley.....	29.04	20,952,000	29.75	20,727,000

Total grain yield, Ontario and Eastern Provinces, in 1910:—Spring wheat, 5,722,600 bush.; winter wheat, 15,376,000 bush.; coarse grains, oats and barley, 220,466,600 bush.

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	Yield per acre, 1909.	Total Yield, 1909.	Yield per acre, 1910.	Total Yield, 1910.
	Bush.	Bush.	Bush.	Bush.
<i>Manitoba—</i>				
Spring wheat.....	18·77	52,706,000	13·65	41,159,000
Oats.....	39·76	55,267,000	28·76	41,742,000
Barley.....	29·98	20,866,000	20·21	13,826,000
<i>Saskatchewan—</i>				
Spring wheat.....	23·13	85,197,000	16·73	81,139,000
Oats.....	49·70	91,796,000	31·10	61,367,000
Barley.....	33·28	4,493,000	26·18	3,598,000
<i>Alberta—</i>				
Winter wheat.....	24·80	2,009,000	12·59	1,234,000
Spring wheat.....	24·90	7,570,000	12·32	5,359,000
Oats.....	46·80	38,376,000	24·27	23,644,000
Barley.....	32·25	5,999,000	20·32	3,953,000

Total yield of grain west of Ontario in 1910 :—Spring wheat, 127,657,000 bush.; winter wheat, 1,234,000 bush.; coarse grains, oats and barley, 148,130,000 bush.

By Mr. Chisholm, (Huron, :

Q. In regard to the estimate for Saskatchewan, what about the number of acres that are ploughed up, because there were a great many? Will that take away from the average of the others that were not ploughed up but were harvested?

A. The Departmental Statistics, I believe, base their estimate of the average production of crops on the area sown. The total area under crop in the whole Dominion in 1910 was 32,711,062 acres, being an increase of 2,645,506 acres over 1909.

Q. It is quite evident that land that has been ploughed up would, in the estimate, tend to reduce the average?

A. Yes it would. With regard to the yields of cereals in the west, you will notice that the farmers there have a much smaller yield of coarse grains than the farmers in the east have, and of course they have not the same amount of stock to consume it.

RESULTS OBTAINED ON TRIAL PLOTS OF GRAIN ON EXPERIMENTAL FARMS.

It may be interesting here to compare the crops we have had during 1910 on the trial plots of grain on the Experimental Farms in the several provinces of the Dominion, as showing the results obtained under the best treatment of the land for these crops. I may say that a Crop Bulletin has just been issued giving full details as to these results.

CENTRAL EXPERIMENTAL FARM.

In giving you these results, you must bear in mind that they are from plots varying from one-tenth to one-sixtieth of an acre. The difficulty sometimes is to get enough uniform land to permit of the plots being made larger, but the area of land of a uniform character is limited, and we have a great many varieties to test.

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	Bush.	Lbs. per acre.
<i>Spring Wheat:—</i>		
Average Yield of 16 varieties..	35	48
<i>Oats:—</i>		
Average Yield of 24 varieties..	68	8
<i>Barley, Six-row:—</i>		
Average of 11 varieties..	65	38
<i>Barley, Two-row:—</i>		
Average of 10 varieties..	45	47

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

<i>Spring Wheat:—</i>		
Average of 13 varieties..	39	19
<i>Oats:—</i>		
Average of 21 varieties..	121	29

That seems a very extraordinary yield for oats, but the yields have been unusually large on Prince Edward Island during the past year. I may say that the measurements of the plots have been very accurately made and the statements of yields here given may be accepted as correct.

By Mr. Blain:

Q. Are these plots watered, or do they depend on the natural rainfall?

A. They are not artificially watered, but are treated the same as a field crop.

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.—*Continued.*

	Bush.	Lbs. per acre.
<i>Barley, Six-row:—</i>		
Average of 11 varieties..	65	38
<i>Barley, Two-row:—</i>		
Average of 10 varieties..	62	19

EXPERIMENTAL FARM, BRANDON, MAN.

<i>Spring Wheat:—</i>		
Average of 8 varieties..	35	14
<i>Oats:—</i>		
Average of 16 varieties..	83	3
<i>Barley, Six-row:—</i>		
Average of 10 varieties..	43	29
<i>Barley, Two-row:—</i>		
Average of 9 varieties..	52	12

By Mr. Campbell:

Q. What were the varieties sown at Brandon?

A. All that information is given in the bulletin to which I referred a moment ago. The varieties sown there were those that we have found to be of the best quality, the earliest and the most productive.

Q. In this record, is there any statement regarding the early ripening qualities of certain varieties?

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A. Yes the dates of sowing and of ripening of all these different varieties are given. You will find all the needed information in the bulletin which has just been issued.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

The Experimental Farm at Indian Head has given excellent yields during the past season. Here are the figures:—

	Bush.	Lbs. per acre.
<i>Spring Wheat:—</i>		
Average of 7 varieties..	50	14
<i>Oats:—</i>		
Average of 16 varieties..	77	—
<i>Barley, Six-row:—</i>		
Average of 10 varieties..	62	2
<i>Barley, Two-row:—</i>		
Average of 9 varieties..	59	25

EXPERIMENTAL STATION, LETHBRIDGE, ALBERTA (NON-IRRIGATED).

<i>Winter Wheat:—</i>		
Average of 9 varieties..	11	3
<i>Spring Wheat:—</i>		
Average of 12 varieties..	11	—
<i>Oats:—</i>		
Average of 16 varieties..	21	13
<i>Barley, Six-row:—</i>		
Average of 10 varieties..	9	12
<i>Barley, Two-row:—</i>		
Average of 9 varieties..	10	13

On the irrigated part of the land where water has been applied the yields have been larger, but the irrigated land this year had not all the advantages it should have had, for the reason that the water was not available until some time in June, owing to the ditches being under repair, and, as the spring was exceedingly dry, an earlier watering of these crops would have been very beneficial.

EXPERIMENTAL STATION, LETHBRIDGE, ALBERTA (IRRIGATED).

	Bush.	Lbs. per acre.
<i>Spring Wheat:—</i>		
Average of 4 varieties..	25	52
<i>Oats:—</i>		
Average of 5 varieties..	71	10
<i>Barley, Six-row:—</i>		
Average of 4 varieties..	33	36
<i>Barley, Two-row:—</i>		
Average of 2 varieties..	48	26

By Mr. Campbell:

Q. I notice that winter wheat is not cultivated on the irrigated land at Lethbridge?

A. Winter wheat is grown in that country almost entirely on non-irrigated land, and it usually can be grown to great advantage there. In 1909 we had an average of 27 bush. 11 lbs. per acre from fourteen varieties sown on non-irrigated land.

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Q. That is as compared with 11 bushels this year?

A. Yes. The season of 1910 was such a wonderfully exceptional season in respect of drought that it is not to be wondered at the crops were small. No such season has been experienced in the memory of the oldest inhabitants in that part of Alberta, and we hope it will not occur again in our time. Still, the average of 11 bushels per acre on 'dry-farming' land is not bad when you consider the averages that are got in those states that border on Canada, where the most of the yields were less.

EXPERIMENTAL STATION, LACOMBE, ALTA.

At the Experimental Farm at Lacombe there were also unusually large returns this year. Some are almost unbelievable, but I think the superintendent has checked the returns very carefully. He furnished me figures of the actual weight of grain grown on each plot and the exact sizes of the plots, and thus every means has been taken to get the returns strictly accurate.

	Bush.	Lbs. per acre.
<i>Spring Wheat:—</i>		
Average of 10 varieties.. . . .	63	7
<i>Oats:—</i>		
Average of 17 varieties.. . . .	74	24
<i>Barley, Six-row:—</i>		
Average of 10 varieties.. . . .	69	34
<i>Barley, Two-row:—</i>		
Average of 9 varieties.. . . .	60	18

EXPERIMENTAL FARM, AGASSIZ, B.C.

	Bush.	Lbs. per acre.
<i>Spring Wheat:—</i>		
Average of 9 varieties.. . . .	26	51
<i>Oats:—</i>		
Average of 17 varieties.. . . .	72	23
<i>Barley, Six-row:—</i>		
Average of 10 varieties.. . . .	39	2
<i>Barley, Two-row:—</i>		
Average of 9 varieties.. . . .	43	14

The details connected with all these figures I have given you will be found in this crop bulletin and a good deal more information in regard to the earliness and adaptability of these special varieties to the different parts of our great Dominion. The outline I have given you shows that the average returns from the plots of grain on the several experimental farms are a long way in advance of the average yields obtained by the farmers of the several provinces. There is no doubt that these latter will materially increase as the farmers gain a better knowledge of their business.

EXPERIMENTAL STATION, FORT VERMILION, ALTA.

Some returns have been received from the experimental station at Fort Vermilion, on the Peace River, Alberta, within the last few days. Fort Vermilion is here and Edmonton here (indicating on the map).

By Mr. Chisholm (Huron):

Q. What is the latitude there?

Hon. Mr. FISHER.—About 58.

Dr. SAUNDERS.—58½ nearly.

By Mr. Blain:

Q. What is the distance of Fort Vermilion from Edmonton?

A. It would be about 400 miles in a straight line and about 700 miles by the mail route, which follows the course of the lakes and rivers. The season of 1910 was earlier there than that of 1909. Seeding was begun on the 26th of April and was general by May 1st. The growth of all crops was very rapid, but on June 28th a frost occurred which injured potatoes, beans and some other tender vegetables. No other set-back occurred until August 14th, when there was a light frost, followed by a heavier one on the 16th, when grain in some parts of the district was injured, although the wheat on the experimental station escaped damage.

Six varieties of wheat were under test, and their average yield from experimental plots of one-sixtieth of an acre each was 43 bushels, 24 lbs. per acre. I have brought two varieties of grain with me to show the Committee. Marquis, which is one of our new early varieties, has given, at Fort Vermilion, a yield of 40 bushels per acre, the wheat weighing 65 lbs. per bushel. The other is a sample of Red Fife, which gave 43 bushels per acre, weighing 62 lbs. per bushel. You will notice that the Red Fife is not very well matured and appears to have been slightly frosted, whereas the Marquis is a very good sample of grain, showing the advantage of using the earlier ripening sort for these far northern districts.

Four varieties of oats were under test and their average yield from similar plots was 69 bushels 16 lbs. per acre.

Three varieties of six-row barley were under trial and the average yield was 55 bushels 29 lbs. per acre. Our superintendent usually sends me, a little later, yields from the fields of the farmers in that district, but I have not yet got those particulars from him.

By Mr. Wilson (Lennox and Addington):

Q. How do they compare with the yield from your plots?

A. There is no uniformity at all. Sometimes the plots are lower than the field, but, as a rule, the fields are lower than the plots, sometimes considerably lower. Last year the average in the Peace River country was about 24 bushels of wheat per acre, and I am expecting to hear that the average is pretty nearly the same this year. The season was a little earlier, which gave the wheat a little better chance to mature.

By Mr. Wright:

Q. Grown on comparatively new land, I suppose?

A. We made an arrangement with this man for carrying on this experimental work on at least five acres of the best land he could secure. It was all good land for wheat growing. Of course, that district is very far north, and I have not been able to visit it and inspect it myself; but from what we know of the land, I should say it compares favourably with other land in Alberta, but is probably not superior to those lands that the other settlers have under cultivation.

While the yield of wheat in 1910 in Alberta was very low, averaging 12.59 bushels per acre for fall wheat and 12.32 for spring wheat, compared with 24.80 and 24.90 bushels per acre, respectively, in 1909, and the figure given as the average yield in Manitoba, 13.65 bushels per acre, is also low, it is worthy of note that even these lowest yields compare very favourably with those of our neighbours to the south of us.

YIELDS OF PRINCIPAL GRAIN CROPS IN UNITED STATES FOR YEARS 1909 AND 1910.

The following table gives some of the details of the yields of the principal grain crops in the United States for the season of 1910 and of 1909, taken from the 'Crop Reporter,' the official organ of the United States Department of Agriculture. The average yield per acre of the entire wheat crop of that country is given, also that of

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several States individually, namely, North Dakota, South Dakota, Kansas, Minnesota and Nebraska, where the yields, owing to somewhat similar climatic conditions, are to a certain extent comparable with those of the Canadian Northwest.

	Yield per acre, 1910.	Yield per acre, 1909.	Average Yield for ten years.
	Bush.	Bush.	Bush.
<i>Oats—</i>			
United States, entire crop	31.0	31.9	29.5
North Dakota.....	7.5	32.0	29.7
South Dakota.....	23.4	30.0	31.6
Minnesota.....	28.7	33.0	31.7
Nebraska.....	28.0	25.0	26.4
Kansas.....	33.0	22.0	24.4
<i>Barley—</i>			
United States, entire crop	22.4	24.3	25.7
North Dakota.....	5.7	21.0	23.0
South Dakota.....	18.2	19.5	25.3
Minnesota.....	21.9	23.6	25.7
Nebraska.....	18.5	22.0	24.0
Kansas.....	18.0	18.0	19.8
<i>Spring Wheat—</i>			
United States, entire crop.....	11.8	15.8	13.7
North Dakota.....	5.5	10.7	12.1
South Dakota.....	12.8	14.1	12.1
Minnesota.....	16.0	16.8	13.0
Nebraska.....	13.9	14.0	13.0
Kansas.....	8.4	11.5	11.8

FREE DISTRIBUTION OF SEED GRAIN.

Grain grown in Canada will average a greater weight per bushel than it does in the United States.

The advantages are, no doubt, partly climatic and partly due to the fact that during the past 24 years a free distribution of the best and most prolific sorts of seed grain obtainable has been made annually to Canadian farmers, the seed being sent in bags of four or five pounds each, free, through the mail. For the past ten years this distribution has averaged more than 40,000 samples, and during this time these samples have reached almost every progressive farmer in the remotest districts of the Dominion. Gradually these better sorts and heaviest croppers have become the common sorts in cultivation. Only one sample is sent out to each applicant, but a sample may be had each year, which will, in a very short time, furnish the farmer with the best varieties of the more important crops at no cost to himself beyond that of his own labour.

The number of farmers receiving this direct benefit from the Central Experimental Farm last year was 39,763. If the number of samples distributed from the branch farms be added, this will bring the number up to a total of about 50,000.

One of the most interesting sorts being sent out this year is a hard red wheat known as Marquis, which is a cross of Red Fife with Hard Red Calcutta, produced at the Central Farm by the Cerealists. This grain is usually from a week to ten days earlier than Red Fife, is equal to Red Fife in quality, and thus far has been more productive.

In 1909 a field of $4\frac{3}{4}$ acres of Marquis, grown at the Experimental Farm at Brandon, Manitoba, produced an average of 52 bushels 18 lbs. per acre. In 1910 a field of $5\frac{1}{2}$ acres at the Experimental Farm at Indian Head, Saskatchewan, averaged 53 bushels per acre. Its weight is 65 lbs. per bushel, 5 lbs. over the standard. A sample of

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grain from this field is submitted. The excellent sample of Marquis wheat grown at Indian Head will constitute the larger part of the wheat of this variety to be distributed this year.

This (showing another sample) is an early form of the Red Fife known as Early Red Fife. It is not quite so early as Marquis, but is from four to six days earlier than the ordinary Red Fife. These are the two most interesting varieties being sent out this year. A sample of Marquis is also here submitted which was received from Fort Vermilion, on the Peace River, Alberta, where a plot of this wheat gave a yield at the rate of 40 bushels per acre, weighing also 65 lbs. per bushel. Last spring 2,112 samples of 5 lbs. each of Marquis wheat were distributed free by mail, and a limited quantity sold in lots of from two to five bushels each. The distribution this year will be larger and will provide seed sufficient for sowing a considerable area in the Northwest next year. The demand for the Marquis variety is large this season, and I fear it will be quite impossible to meet all the requests.

' DRY-FARMING.'

The great drought which prevailed during the past season over a large part of the Canadian Northwest has led many farmers to pay more attention to what is known as 'dry-farming,' and to treat their lands in such a way as to conserve the moisture. In the discussion of this subject the field of view occupied is not always broad enough; the annual precipitation is sometimes the only feature taken into account. There are other factors which should be considered, such as the seasonal distribution of the rain, the rate at which the rain is precipitated, the kind of soil on which it falls and the loss of water through surface run-off. The amount of loss from evaporation will depend largely on the way the soil is worked.

Roughly speaking, 'dry-farming' is usually considered to be adapted to those regions where the annual rainfall is more than 10 and less than 20 inches. This, however, is only a rough approximation, and it is quite impossible to say where ordinary farming methods should give place to those known as 'dry-farming' methods. 'Dry-farming' is usually understood to mean the adoption of those practices which result in the conservation of moisture.

The method of alternate cropping and summer tillage, known as fallow, is generally recognized to be the most highly developed and successful 'dry-farming' method. This, however, admits of only one crop in two years, and this practice is usually confined to those districts where the yearly rainfall is very light. Where the total precipitation is greater, the plan is usually followed of growing two grain crops in succession, one on fallow and the other on stubble, followed by a season of fallow. In this way the farmer takes from his fields two crops of grain in three years. The good results had from this method have been thoroughly demonstrated at Indian Head, Saskatchewan, by Mr. A. Mackay, who originated this practice, which has been operated for many years in that district. It has been claimed and, I think, with good show of reason, that by ploughing for a fallow in June and the proper use of cultivators and packers throughout the summer, about one-half of the moisture which falls on the fallow during the season may be conserved in the soil and carried over and utilized by the crop the next season. Further, the cultivation of the surface cleans the land from weeds.

The fall of every inch of rain adds to the moisture in each acre 112 tons of water of 2,000 lbs. each. After a heavy shower, if a cultivator can be promptly used, the surface is scratched and loosened and a 'dust-blanket' formed which prevents much evaporation. This practice, associated with the use of a packer when needed to firm the soil, and fallowing the land every second or third year, constitute the main features in connection with 'dry-farming.' But, as conditions vary in almost every district, no

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unchanging rules can be laid down for general guidance; each man bearing in mind the principles he is to practise, must use his own judgment and common sense in their application.

OUR HERITAGE IN AGRICULTURAL LANDS.

There is one subject which I have often referred to in public addresses, which I should like again to mention briefly this morning. In my twenty-five years of busy occupation in trying to acquire as thorough a knowledge as possible of Canadian agriculture in all its aspects, there is one idea which has impressed me most profoundly, and that is the enormous extent of the agricultural resources of this country. During that period it has been my privilege to travel some thirty times or more over the settled area lying between the Atlantic and the Pacific and to study its conditions and possibilities. Although the impressions on my own mind have been deepened from year to year during my annual or semi-annual visits, I find it very difficult to present the formidable figures which are required to meet this case in such a way as to admit of their being grasped so as to be understood.

Compared with the resources in minerals, forests, fisheries, etc., agriculture far outweighs them all. Although only a very small proportion of the total land area in Canada has yet been laid under tribute, the returns to the nation in agricultural products exceed those from all other sources.

Let us consider for a few moments the volume of our heritage in agricultural lands in the different parts of this great Dominion, and endeavour to get some slight insight into the wonderful agricultural possibilities which are sure to present themselves when the population of Canada shall have become at all proportioned to the size and resources of the country to be developed.

The approximate land surface (exclusive of the water areas) in the several parts of the Dominion are given in official documents as follows:—

Eastern Provinces.	Square Miles.	Acres.
Ontario..	219,650	149,576,000
Quebec..	344,450	220,448,000
Nova Scotia..	20,600	13,184,000
New Brunswick..	28,200	18,048,000
Prince Edward Island..	2,000	1,280,000
Total in acres..		402,536,000
Prairie Provinces.		
Manitoba..	64,066	41,002,240
Saskatchewan..	242,332	155,000,000
Alberta..	251,180	161,000,000
Total in acres..		357,002,240
British Columbia..	382,300	244,672,000

These figures give us a total of about 402,000,000 acres in the eastern provinces, in the three prairie provinces of about 357,000,000 acres and in British Columbia 244,000,000 acres, a grand total of 1,004,000,000 acres.

Besides this, Canada has a land area in the Yukon Territories	Acres.
of about..	125,000,000
In Mackenzie..	307,000,000
Keewatin..	318,000,000
Ungava..	176,000,000

A total in these comparatively unknown territories of about 926,000,000 acres.

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Acres.

Let us suppose that one-third of the land in the eastern provinces is arable, by which is meant of such a degree of fertility as to admit of cultivation or pasture with profit, that gives us. 134,179,000

A larger proportion of rich prairie lands in the west will be suitable for farming; deducting one-half for poor, rocky or swampy ground, which is probably a very liberal estimate, there remains. 178,501,000

In British Columbia, the districts of high altitude occupy so large a proportion of the country that the area cultivable will be small. It would, however, probably be safe to estimate this at one-tenth of the whole, giving. 24,000,000

In all, as probably useful for agricultural purposes. 336,680,000

An area, the magnitude of which it is difficult to conceive of.

By Mr. Chisholm (Huron):

Q. In regard to Fort Vermilion, what is the altitude? Was the farm where the experiments were made in the valley of the river or up on high land?

A. The river is not very deep and the valley is quite shallow. The farm is located a couple of miles from the river.

Q. What would be the altitude?

A. It is 950 feet.

Q. The country there, no doubt, suffers from summer frosts?

A. Yes; but the altitude is not anything like as great as it is at Indian Head, which is 1,924 feet.

By Mr. Campbell:

Q. In looking at these samples of wheat from Indian Head and Vermilion, I see that in the former case the Red Fife wheat is of a much redder colour than the Marquis wheat and in the latter case vice versa, the Red Fife is whiter in colour. Have you any reason to offer for that?

A. I mentioned that, at Vermilion, the Red Fife wheat did not have time to mature before the frost started, and the skin is roughened and somewhat bleached and immature. It weighs 62 lbs. as against 65 lbs. of the other variety.

Q. Is it your experience that frost whitens the grain?

A. It is said to do so sometimes.

Q. Up in our country it blackens the wheat.

Mr. ROBB.—Are you sure that the grain sown was Red Fife?

Q. It looks like White Fife to me?

A. The only wheat sent up there was Red Fife. Before that we were chiefly growing Ladoga from samples sent out years ago, for the reason that it was a week earlier.

Mr. ROBB.—That sample looks more like White Fife than Red Fife.

A. There is no doubt that it is Red Fife, but it is not fully matured and it is weathered, perhaps more by exposure than by frost. There were no samples, either of Red Fife or Marquis, up there until we sent them. Our representative there has had no other seed from which he could grow these varieties. Besides, the samples have been examined by our experts at the farm and pronounced by them genuine.

By Mr. Sealey:

Q. I notice that out at the Central Experimental Farm you clip the feeding cattle. What is the advantage of doing that?

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A. It is to economize labour. We find that when they are clipped they keep much cleaner than when they are not clipped. When the cattle are not clipped, they are likely to be soiled by lying down in their stalls. The practice of clipping makes them much more presentable, and I think it is also much healthier for them; but that is a matter which is more in Mr. Grisdale's, the Dominion Agriculturist's, line, and I believe you are to have an address from him very shortly.

The CHAIRMAN.—If there is no further discussion, we will bring the meeting to a close. I am sure that we have been highly delighted with Dr. Saunders' address. His account of the experimental work that is being carried on at different stations must, I am sure, impress every member of the committee as being of very great value, and it proves to us the extent to which it is possible to develop our returns from agriculture, if the farmers would only pursue more thorough and scientific methods.

NEW EXPERIMENTAL STATIONS.

Dr. SAUNDERS.—There is one thing I have forgotten to call attention to, and that is that steps have been taken within the last few days to establish three new experimental stations in the far north, one at Fort Resolution, a second at Fort Smith and a third at Fort Providence. These three points in the Northwest will carry our experiments about 150 to 200 miles farther north than anything we have before attempted. We hope to have something to report to the committee next year on that subject.

The CHAIRMAN.—I think the most important work that our experimental farms are doing is in connection with the experimental stations.

By Mr. Robb:

Q. How do you account for the rot which prevails in potatoes throughout this country this year?

A. I think I would rather leave an explanation of that to our Botanist, who has been studying the matter. It is due to the dissemination of fungous growths, but what it is that controls them in some districts and allows them to spread broadcast in others it would be very difficult to say. There are many things we have to accept and to put up with because we do not know how to control them yet, but we are learning all the time.

The committee adjourned.

Certified correct,

WM. SAUNDERS.

ROTATIONS AND SOIL CULTIVATION

HOUSE OF COMMONS,

COMMITTEE ROOM, No. 30,

WEDNESDAY, January 25, 1911.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock, a.m., the Chairman, Mr. Schell, presiding.

The CHAIRMAN.—You have noticed, gentlemen, from the agenda that we are to have an address this morning from Mr. J. H. Grisdale, Dominion Agriculturist, on the subject of 'Rotations and Soil Cultivation; their Influence on Crop Production.' No more important subject could we have than the subject as announced in this notice. It is the very basis and foundation of all successful agriculture. Mr. Grisdale does not need any introduction to this committee. He has appeared before us on former occasions, and I am sure we shall listen with pleasure and with profit to any remarks he has to offer to us this morning. Mr. Grisdale will now address us.

Mr. J. H. GRIDDALE: Mr. Chairman and gentlemen—As has just been indicated the subject of my remarks this morning is 'Rotation and Soil Cultivation; their Influence on Crop Production.' I want to read a small part at the beginning.

CANADIAN CROPS IN 1910.

According to the December 1910 'Census and Statistics Monthly' the total area of field crops in Canada in 1910 was nearly 33,000,000 acres. The crops grown on this land when valued at average market prices are estimated to have been worth something over \$507,000,000. These facts being accepted, the value of the average crop per acre would be about \$15.50. In the 'Census and Statistics Monthly' no estimate is made of the cost of the cultural operations nor of the harvesting of this immensely valuable crop. A fair estimate of the expense of producing the crop, cost of seed and labour, wear and tear of machinery considered, would be about \$9.60 per acre, made up as follows:—

Ploughing.	\$1.50
Working, preparatory to seeding.	0.75
Seeding.	0.20
Seed.	1.00
Later cultivation and care.	0.75
Cutting.	0.30
Hauling and threshing.	2.00
Twine.	0.30
Use of machinery.	0.30
Interest, charges, &c.	2.50
Total.	\$9.60

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An acre of hay will cost less, but an acre of roots or corn will cost very much more; thus things would probably be approximately balanced up. This shows a net profit of nearly \$6 per acre, or say \$195,000,000 profit on the crop of 1910 over and above all cost of production.

CENTRAL EXPERIMENTAL FARM CROPS, 1910.

Now, on the Central Experimental Farm, Ottawa, and on that part of it distinguished as the '200 acre farm' crops were grown on a total area of 173.17 acres.

These crops figured at the prices used by the 'Census and Statistics Monthly' in estimating the value of the crops grown in Ontario, are as follows:—

59.34 acres oats—

54 $\frac{1}{4}$ bushels per acre equals 3,239 bushels, at 36 cents equals... \$1,166.04

10.25 acres roots—

695 $\frac{2}{3}$ bushels per acre equals 7,126 bushels at 20 cents equals... 1,425.20

42.93 acres corn—

15 $\frac{1}{2}$ tons per acre equals 665 tons at \$4.67 equals... 3,105.55

60.65 acres hay—

3 $\frac{3}{4}$ tons per acre equals 190 $\frac{1}{2}$ tons at \$10.21 equals... 1,945.00

So that the crop on the 173.17 acres was worth \$7,641.79 or \$44.13 per acre.

The average cost to handle each acre of the 173.17 acres of 'The 200 acre Farm' under crop in 1910 was about \$12.50 (including \$3 per acre for rent or interest charges) made up as follows:—

Ploughing..	\$1.06
Preparation for seeding..	1.12
Seeding..	0.14
Seed..	1.50
Later cultivation, including hoeing..	1.63
Twine..	0.30
Harvesting, housing and threshing..	3.50
Use of machinery..	0.40
Interest charges, &c..	3.00
	<hr/>
	\$12.65

This deducted from the value of the crop, \$44.13 per acre, would leave a margin of \$31.48. If all the land under cultivation in Canada had left such a margin between the cost of cultivation and the value of the crop produced, the net profit would have been not \$195,000,000 as under present conditions but \$1,038,840,000 or five times as great as at present.

CANADIAN CROP POSSIBILITIES.

Using the same figures it will be seen too that our crop would have been worth not \$507,000,000 but \$1,456,000,000. Such results of course would mean very much better systems of farming than now existant. We can scarcely hope to attain the proficiency as farmers that such results would indicate. It is possible, however, for us as a farming nation to do much better than we have been doing and I wish to indicate briefly this morning how I think progress could be made. My remarks will be based primarily on my twelve years' experience at the Central Experimental Farm but also to some extent upon observation made in every province of Canada.

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By Mr. Blain:

Q. Was the net profit to the farmer greater last year?

A. No. The net profit to the farmer on the average in 1909 was about \$8. In 1910 it was only about \$6 per acre. That is according to such statistics as we have.

Q. How does the difference occur?

A. The grain crop in the west was lighter while in the east the oat crop and the hay and forage corn crops were rather lighter, these shortages account very largely for the difference in the total values and in the net profits per acre.

The average results as given in the 'Census and Statistics Monthly' are gathered in such a way that we have no certainty that they are correct. The figures which the statistician uses in estimating the values of these crops are in some cases, I think, rather too high. For instance, the values put on hay, roots and corn for forage could hardly be considered fair prices. These crops may be worth the prices quoted in some places but they certainly are not in Ontario. At the Central Experimental Farm we fixed prices some years ago to enable us to readily compare the crop values year by year. We put corn ensilage or forage corn at \$2 a ton, roots at \$2 a ton, hay at \$7 a ton—our crop is chiefly clover hay—straw at \$4 a ton and grain at one cent a pound. These values we fixed as being pretty nearly fair, taking one year with another and in this way we have some basis of comparison.

INFLUENCES AFFECTING CROP PRODUCTION.

Now the results obtained by any and every farmer in the way of crop returns and profits depend upon a number of factors including the following among the more important (1) soil and drainage, (2) climate and weather, (3) suitability of the line of farming to the location of the farm or some other features beyond the control of the farmer, (4) rotation followed, (5) character and quantity of fertilizer used, (6) suitability, thoroughness and timeliness of the cultural operations performed, (7) quality and variety of seed sown, (8) harvesting methods, (9) cost of cultural operations.

Now since to attempt to discuss in detail even the least important part of any of the above enumerated considerations affecting crop production would mean hours, you will understand that my remarks must be largely confined to a bare statement of some of the more important facts or findings in connection with our crop production work on the experimental farms. I do not propose this morning to cite detailed experiments in proof of every statement I make, although I have without exception made such experiments. To start to enumerate all these experiments would be to give an amount of detail impossible of going through before this committee on account of the length of time it would occupy.

SOILS AND DRAINAGE.

To begin with soils and drainage. As you know, soils are not controllable; a man must take the soil as he finds it on his farm. He may have, to begin with, something to do with the picking out or selection of his land, but once he is settled on a spot he is perforce compelled to take that land as he finds it and do the best he can with it. Therefore that is a negligible, or almost negligible, quantity except in so far as the methods which are followed should suit the land under cultivation.

The different kinds of soil which a man may have might be mentioned as, coarse gravelly sand, fine sand, light loam, average loam, heavy loam, clay, hard pan and black muck. That includes pretty nearly the whole range of soils as we have them in Canada or in the world. Fortunately we have all these varieties at the Central Farm; unfortunately we very often have them all in one and the same field. As a matter of fact you can hardly travel one hundred yards on any part of the Central Experimental Farm without finding a decided change in the character of the soil,

This has been of great advantage to us in one way: it has enabled us to make a study of the best methods of treating these different soils; but it has been a disadvantage in so far as it has not permitted us to get the very best results from our cultural operations as would have been the case if our soil had been uniform. As you know it is very difficult indeed to so grade the working of a field that one end of that field, or the middle, shall receive certain cultural treatment and the other end get some other treatment. But we have, wherever necessary and wherever possible, divided the fields to soil peculiarities and studied the methods of cultivation of these soils.

TREATMENT OF SOILS.

Reviewing the soils, I may say briefly that we have found coarse gravelly sand a very difficult land indeed to handle. The only salvation is the addition of humus in large quantities. Even when this humus has been added it is almost impossible to get good results from such soil excepting in very wet seasons.

Fine sand is somewhat easier of handling, but here also it is very difficult to insure good results especially in dry seasons; this because fine sand allows water to percolate very rapidly, and it is, therefore, absolutely necessary to add large quantities of humus and get this humus as deep as possible.

Light loam is the soil likely to give best results to the average farmer under average conditions as to weather and location in Canada. We get on light loamy soils good crops of clover, first-class crops of roots and corn, and medium crops of grain. For the farmer in Eastern Canada the above is the way in which the crops should be arranged; get as heavy crops as possible of the forage and do what he can with the grain. At least in my opinion that is the line of farming that should be followed.

Clayey loam is, of course, about as good, because with a good clayey loam one gets good crops of all kinds. The clayey loams are more difficult to handle, but will, we find, give relatively better crops of grain than lighter soils, with possibly not quite such good yields on the average in the case of hoed crops.

Clay is difficult to handle under adverse climatic or weather conditions. When clay is too dry it is exceedingly difficult to get the soil in right condition for the best crop production. It necessitates the addition of a large amount of humus to open it up and make it more porous and put it in better shape for the conservation of moisture; and so far as the handling is concerned it is almost as difficult to succeed with a clay soil as with a light sandy soil or a coarse sandy soil.

Black loams or peaty soils are possibly the most difficult to manage of all. They present so many problems that one might discuss the thing for hours and work for years and still find himself very far from satisfactorily solving the difficult problems these black muck soils present. We are unfortunately troubled with a good deal of land of this kind at the Central Experimental Farm and find it a bother every year. In the first place, it is hard to keep free from weeds. In the second place, it is hard to handle in the spring. In the third place, it is very difficult to get a catch of grass on it, as it is probably the most difficult of all soils to seed down for grass.

DRAINAGE.

Now, in all these soils we have found that good drainage is a most important consideration. No matter how light the soil, if that soil is drained either naturally, if it lies properly or by artificial drainage, the conditions are greatly improved. Even the lightest soils do better when under-drained or when well surface drained than they do when left to themselves. In the cases of loams, clays and black mucks artificial drainage is almost absolutely necessary if good results are to be anticipated. We have tried this over and over again in different fields with surface draining or tile draining, or combining the two, and in every case we have found that draining

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the soil has added on the average at least 50 per cent to the value of the field, and possibly more. Imperfect drainage, while being a help, is far from being satisfactory. By imperfect drainage I mean insufficient drainage. For instance, a man may put down tiles which are too small or laid too near the surface, or without sufficient fall, and get some results, but to get satisfactory results it is absolutely necessary that tiles be sufficiently large, laid sufficiently deep, that the outlet be free and that the slope be sufficiently steep to insure a fairly rapid flow of water.

If all these conditions are complied with, the results will be such as to pay for the drainage in a very short time. Just to illustrate: The first year I went to the Central Experimental Farm the value of the crop was \$2,700 or thereabouts. I found about 20 per cent of the farm to be imperfectly drained. The man who tiled that part of the land had not put the tiles sufficiently deep and had not given a sufficient outlet. I redrained that 20 per cent the first fall, and the next year the increase in the value of the crop was about \$1,000, which was largely due, I am confident, to the more perfect drainage of that one-fifth of the farm, or an area of about 40 acres. That point has been demonstrated over and over again on every farm where tile drainage has been done, so it is not necessary for me to dwell any longer upon it. I am of the opinion that the best kind of drainage is a combination of surface or ditch drainage and tile drainage. A tile drain system with a supplementary surface drainage system, especially on low-lying land, would allow the surface water to escape in the spring as rapidly as possible. If we have to wait until the ground thaws out to allow of surface water escaping, the water lies too great a length of time on the land and does much harm. Of all the factors making for the improvement of soils, drainage and humus are the two great points. I want to emphasize this latter point further on so I will leave it for the present.

WEATHER OR CLIMATIC CONDITIONS.

Now, after we have considered soil and drainage, naturally the weather or climatic conditions come next. Adverse climatic conditions in my experience very frequently resolve themselves into poor drainage, faulty cultural methods and unsuitable varieties of grain in use. Many a man has said: 'The weather has been so bad this year that I have had very poor crops.' I am in a position to say that in many cases that man was mistaken. The poor crops which he harvested were due not to the weather conditions but to his own faulty handling of his farm. Had he drained that land properly, had he handled it when it should have been worked, had he done everything at the right time and in the right way, the probabilities are—in fact, the certainty is—that he would have had very much more than an average crop, a very much better crop than he really did have. I have seen this demonstrated, not at the Experimental Farm, but across the road on exactly similar land, but land that was differently handled. I have seen crops not one-tenth as good as the crops at the Experimental Farm and the failure due almost entirely to faults along the lines I have mentioned.

SOIL MOISTURE CONTROL.

Now there are other points which have to do with the control of the moisture, for that is really what it amounts to. Weather means moisture. Of course, we must have heat too, but moisture is the principal factor; and the conditions controlling that are, right tillage, proper rotation and the performance of cultural operations at the right time and, of course, the right operations. For instance, a man growing corn might decide that it would be advisable for him to hill up all his corn. If he hilled it up and the weather turned dry afterwards, the probabilities are that he would lose several dollars per acre on his corn crop, probably 15 to 20 or 25 per cent

of the crop of corn that might otherwise have been his. I have seen that demonstrated over and over again—not near the Experimental Farm merely, but in many other places—the results being marked, indeed, in favour of the flat or level cultivation.

SUIT THE LINE OF FARMING TO THE LOCATION.

After the weather and climate we may consider the suitability of the line of farming to the location or to the district in which a man finds himself. In the first place many men find themselves in such locations that it seems almost impossible to carry on any other kind of farming than what we call grain farming. To start with, grain farming is no doubt permissible or advantageous; but in my opinion one should very soon get into some kind of mixed farming. Mixed farming is the second stage and one should not be long in reaching it, as is demonstrated amply by results which have been observed in eastern Canada, in Ontario and all through the west. We must get into mixed farming if we are to make a success of our agricultural operations; and the fact that many of our farmers are content to continue as grain growers is one of the most important factors making for low returns per acre on our cultivated land in Canada. Mixed farming includes, of course, live stock, and if conditions are such as to make it profitable, the introduction of dairy cattle will make it still more profitable. In an investigation which I carried on some few years ago in Ontario I found that the net profit of the farmer was considerably greater on the farm where dairying was carried on than in other lines of farming. However, a man must, as I said before, consider the location in order to suit his possible production to what he can market the most profitably and the most economically.

THE ROTATION FOLLOWED.

Rotation, as already indicated, is probably the most important factor of all in making for profitable returns from farming. Parkman in his histories of early Canada, speaking of agriculture among the Indians some three hundred years ago, said their method was to clear a piece of land, grow corn on it and keep on growing corn year after year until no more corn would grow. Then, instead of trying to improve the soil, they abandoned their cabins and moved over to the next lot or township and repeated the process. Now, that is pretty nearly the line followed by many of our farmers to-day. Many of us are not much ahead of the savage in our agricultural operations. We must make a change. We can change very easily, that is introduce a longer rotation. The above is what you might call a one-year rotation the same crop year after year. It is modified in the west somewhat by the introduction of the summer-fallow, which helps to keep the land clean, but which also helps to deplete it of its fertility.

WHAT TO LOOK FOR IN A ROTATION.

The fact of rotation being advantageous has been known for many years. The earliest Romans knew of the value of the rotation to a certain extent, and the best European and British agriculturists, without exception I do believe, follow some rotation on their farms. I visited many farms in Great Britain and never saw a farm on which there was not some rotation being followed. Rotation is an exceedingly important consideration in the production of crops; it affects cost very materially and aids greatly in the maintenance of fertility. In deciding upon the rotation to follow there are a few things one must consider carefully.

In the first place we want to get the greatest crops. It is all right to talk of conserving the fertility of our land, but at the same time we are dependant on the crops we get from it. Therefore, any rotation which is not likely to give as good returns

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per acre as we can get by following the old system of grain farming or some system similar should not be introduced.

In looking for a rotation we must consider the getting of the biggest returns possible. We want also the lowest possible expenditure for labour. One might take a piece of land and running it as a garden get a thousand dollars an acre for the products, as is done in some parts of Canada, cultivating special crops and getting immense returns, but at a great cost for labour and fertilizer. We, as farmers, however, cannot do that; we must consider the smallness or cheapness of the labour required by the land under rotation to get the best results.

Then again, a rotation that gave us big returns, that did not cost very much relatively for labour, but that left our farm poorer at the end of the period of time, would still be a most objectionable rotation. We must have a rotation that will leave our land better year by year. If you can follow a rotation which insures big crops, produces cheaply and leaves your farm in better shape year by year, then you have nearly all the requirements of the ideal rotation.

The rotations I propose to describe will fulfil these rather exacting requirements. Some will give you better results than others. Some will mean a little more labour or expense than following grain farming would entail, but in any case they will fulfil the two requirements of a good rotation, giving good crops and leaving the soil in much better condition at the end of the period of time.

Of course, in fixing upon the rotation to be followed one has to bear in mind several other considerations. In the first place he must consider his soil. A man who is going in for the growing of corn might not find it advisable to pick out a low-lying clay land or undrained land on which to start his operations. He could, of course, work up to it in a sort of way under these conditions, but it would need a lot of preparation. He must also consider the use he proposes to make of his rough produce once it is garnered, whether for dairy cattle, beef cattle, sheep, swine or whatever line of husbandry he prefers. These considerations must all enter very largely into the question of the rotation to be followed.

THE TWO-YEAR ROTATION.

I have mentioned already the one-year rotation where a man grows the same crop year after year. Let me merely mention a two-year rotation, grain alternately with clover. This rotation is not suitable for the average farmer, although it is a rotation which, owing to our favourable climatic conditions in Canada, could be followed, and is a rotation which would certainly give exceedingly good results to the man who felt he had to grow grain and hay almost exclusively.

THE THREE-YEAR ROTATION.

A rotation which I can recommend to any who might think of going into dairying or live stock raising, is a three-year rotation, a rotation which we have tried for the last seven or eight years at the Experimental Farm and found exceedingly satisfactory. First year, corn for forage; second year, grain; third year, clover. The third year of the rotation field might be divided and used one part for hay and one part for pasture. It is a rotation peculiarly suited to the man who has only part of his farm on arable land, the rest being pasture land, or rough land which he could use for that purpose without breaking into his cultivated land. It is a rotation which will give really remarkable results in the way of crop returns, as I shall show in a few minutes.

THE FOUR-YEAR ROTATION.

The four-year rotation is somewhat longer but almost as satisfactory and allows for pasture, thus:—corn, grain, clover hay, pasture, or pasture then hay interchanging

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the last two years. I may say that pasturing the first year after grain has proven most profitable wherever tried and I believe is the best method of pasturing, especially if a man does not count on feeding much hay during the winter. Pasturing during the first year when the land is full of clover is the year when it will give by far the greatest and best results as pasture land.

FIVE YEAR ROTATIONS.

We have tried various five-year rotations, thus: Corn, grain, hay, hay, grain; another one: corn, grain, hay, grain, hay. They have proved almost equally satisfactory. However, I prefer the one where there is a break between the two years of hay. Then, there are rotations suitable for grain farming, or rather suitable for farming where grain is a more important consideration. That is, a rotation such as this: corn or hoed crop, grain, hay, hay, grain. You would have about one-half of the land under grain, two years in hay and one year in hoed crop. In this way, good use can be made of all the fertilizers produced on the farm. The hay crop would be sufficient along with the hoed crops for the maintenance of considerable stock, and the farmer might be said to be carrying on mixed farming in its best form. Now, including those rotations we have been trying ten or twelve different rotations on the Central Experimental Farm. Fixing crop values as already indicated, \$2 per ton for corn and roots, \$7 a ton for hay, a cent a pound for grain and \$4 a ton for straw, the rotations gave returns as follows: Five-year rotation (the one with the break or grain crop between the two years hay) \$23.10; three-year rotation: corn, grain and pasture, \$27.45; four-year rotation with shallow ploughing, \$25.59; four-year rotation with deep ploughing, \$25.45. The three-year rotation—where pasturing the swine was a part of the rotation—and constituted one year of it, \$28.43; the four-year rotation where pasturing with sheep was one year of the rotation—one year and a half you might say, \$19.53. You notice quite a difference in the returns per acre under these different rotations. The labour item was of course somewhat different, but the net profit after paying for labour and everything were about as follows: First, five-year rotation, \$8.79; second five-year rotation, \$8.70; three-year rotation, corn, grain and hay, \$9.56; four-year rotation, shallow cultivation, \$7.60; four-year rotation deep cultivation, \$7.39; the pig rotation, \$8.05; sheep rotation, \$3.80. I might say in explanation of the sheep rotation that it probably should not have come in here for the reason that the area on which it is carried on includes some very poor soil. I think we did not get more than 50 or 60 per cent of a crop off the fields in this rotation due to the kind of soil. It is an old quarry which we have been trying to fill up, and it is really not comparable with the other fields, but I mention it to show that we are doing something in that line.

CHARACTER AND QUANTITY OF FERTILIZER.

Having considered the rotation, one next has to consider the fertilizer which shall be used on the land even although you are following the rotation suitable for the improvement of the soil and for the increasing of the crop returns. The addition of fertilizers to our soils is an absolute necessity. Agriculture the world over has come to recognize the need of fertilizer of some kind.

WHAT IS MEANT BY FERTILIZER.

Fertilizer is a very broad word; it means everything that will make a crop grow. For instance, if you put salt on a crop of mangels or on a crop of barley there will be results, that is, you will see increased returns. Now salt, sodium chloride, contains no element that enters into the composition of the average plant, yet it will, if applied in moderation, increase the return per acre of the two crops mentioned.

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Therefore you may say that salt is a fertilizer although it really contains no plant food.

BARNYARD MANURE THE FARMER'S FERTILIZER.

The average farmer in Canada need pay attention to only one kind of fertilizer, barnyard manure, at least such is my opinion based upon our own experience and confirmed by observing the experience of farmers from one end of this Dominion to the other. There may, of course, be special cases, when orcharding or some special line of farming is being carried on, where commercial fertilizers would be advisable. Mixed commercial fertilizers as found in Canada to-day are, to begin with, not very economical material. They contain in many cases considerable proportions of adulterants, which have no fertilizing value at all. If a farmer felt that he must use commercial fertilizers the best plan would be for him to buy pure fertilizers of some description or other and mix them himself. Muriate of potash, superphosphate and nitrate of soda supply the different elements required for plant growth. Commercial fertilizers, as stated, have some value because of the elements of plant food necessary for crop production.

HUMUS.

But, we find in Ottawa, and I have found wherever I have had the opportunity of witnessing experiments along these lines, that the most important material making for soil fertility is humus. Getting decayed or rotten vegetable matter into the soil is worth infinitely more than adding any amount of commercial fertilizer, or of plant food in the form of mixed fertilizer. Getting this humus into the soil and following the rotations I have mentioned, are the most important considerations. For instance, the three-year rotation leaves a fine clover sod to turn under when it is in its very best form. Our experiments at the Central Experimental Farm during the last few years have demonstrated that such clover sod is worth from \$10 to \$12 per acre to the crop following it. Now that would seem like an exceedingly cheap way of fertilizing one's farm, as it really is. If in addition to this clover we can add a considerable amount of barnyard manure, then we have very nearly ideal conditions. The application of this barnyard manure at short intervals rather than in larger quantities at long intervals, is the better plan. Our experiments show that one of the chief advantages of the short rotations is the fact that the manures can be applied and are likely to be applied in smaller quantities at shorter intervals.

APPLYING BARNYARD MANURE.

The method of applying barnyard manure is a much debated, and, one might say, a vexed question, but we have found that applying it in winter will give very satisfactory results. We, therefore, put it on when the teams and men can be so employed to the greatest advantage; that is, when time is not the question of great importance it is in spring when getting the seed into the ground. If it is left until the spring it has to be put on when other work has to be done and consequently time is lost. The quantity, as I have already stated, should not be very great each time.

THE QUALITY OF THE MANURE.

The quality is a matter of importance. Many a farmer in these eastern parts of Canada thinks he is giving a good dressing of manure to his land when he puts on, we will say, 15 or 20 tons. He is often really giving a very light dressing. Many cattle are poorly fed and such a dressing, 15 to 20 tons per acre, has no greater manurial value than 8 or 10 tons of good barnyard manure where the cattle are properly fed. I mean to say that the manure made by cattle fed on straw and poor

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feeds of that description has very small manurial value indeed. The farm on which cattle are well looked after and well fed is the farm on which every ton of manure is worth anywhere from fifty to one hundred per cent more than where the reverse is the case.

OTHER METHODS OF INCREASING HUMUS.

In addition to barnyard manures, another method of improving the physical condition of the soil—and without perfect physical condition we cannot possibly get good crop results—is to turn down what are known as green manures, such as sod, peas, buckwheat, vetches or anything else that will grow for a time. In the west they let their weeds grow for two or three months until just before danger or seeding point is reached, and then turn them under. The weeds so treated constitute a green manure and have considerable value in adding humus and fibre to the soil. Green manuring, so called, is, however, an expensive method of improving the soil, at least for the eastern farmer, because it takes too much time, time that the field should spend producing forage or grain, and time that the farmers should spend looking after paying crops. As farmers we cannot afford to waste any more time, either our own time or the field's time, than is absolutely necessary, and I consider the spending of a year's time to increase the amount of humus in a soil to be an exceedingly great waste indeed. Besides this, we can grow certain crops in our rotations. As already mentioned, growing clover in the rotation will add very materially to the fertility of the soil. So, also, the growing of peas will be found to be of value in this connection. In fact, the growing of any crop that will leave a considerable residue, otherwise useless, to be turned under and allowed to decompose will be found a great help in the upbuilding of the soil. In following any rotation much can be done to secure the best results in crop returns by ploughing at such times as will insure the largest amounts of vegetable matter to turn under. For instance, in the ploughing and preparing of our land for corn at the General Experimental Farm the best results are secured when we turn the clover sod with the manure under in the spring, say about the middle of May. This always means the turning under of a good growth of grass and clover and very materially benefits the corn crop.

CULTURAL OPERATIONS.

After the rotation has been fixed upon and the fertilizer has been at least anticipated and arrangements made for its application, the proper performance of all cultural operations at the right time—that is, the suitability, thoroughness and timeliness of cultural operations—is the next consideration. Many farmers lose much time each spring by slowness in getting out on their lands. It is possible, of course, to start operations too early, but the farmer must know enough of his business to be able to judge when his land is ready for the application of fertilizers or when it is fit for seeding, and then, the great point, get that seeding done as soon after the land is ready as at all possible. Earliest seeding will mean anywhere from five to ten per cent increase in yield, as has been demonstrated over and over again at our Experimental Farms. The fitness of soil means its temperature and the moisture content. We cannot control the moisture content until we begin to work, but we can provide for taking off the surplus surface moisture and when we do that the temperature of the soil is raised. One most important point in fitting land for seeding in spring is to get on to it as early as possible with a harrow, prevent evaporation, and so raise the temperature and get the land fit for seed germination as soon as that seed is sown. The crop to be grown has, of course, a great deal to do with the treatment that should be given the land. As I mentioned a minute ago, in preparing for corn at the Experimental Farm we plough sod land in the spring. Spring ploughing is not advisable for most crops, but for corn production in Eastern Canada it is

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undoubtedly one of the best methods of getting a big yield. When I say ploughing in the spring, however, I mean turning a very light furrow, the land then to be worked down as firmly as possible. No seed should be sown until the sod that has just been turned down—including barnyard manure and all the grass and clover growing on it—is worked down to a level, smooth surface so that a horse walking over it does not sink more at one spot than at any other. If the growing of grain is intended it is advisable to plough in the fall when the land will have a chance to break down under the action of frost and so become pulverized and aerated. Fall ploughing likewise permits one to do the necessary cultivation, harrowing, &c., early in the spring. Therefore, as I say, the crop to be sown is an important consideration in deciding upon the time when the cultural operations should be performed.

Thoroughness in all cultural operations is an exceedingly important point. The man who harrows, or ploughs, or sows, or cultivates, in a half-hearted kind of way gets a half-hearted kind of crop every time. We have proven this to our own satisfaction over and over again at the Experimental Farm. After cultivating until one would think the field must be sick of the process, or until it looks as though one had overdone the thing and were adding unnecessarily on the expense of the preparation of the soil it is usually well to do a little more. I have almost invariably found 'another little run over' after all seemed right to be the proper thing. It is almost impossible to too thoroughly prepare the soil provided the power available and father time will permit. It will not be advisable, generally speaking, to over-prepare and so neglect the proper time of seeding; but thorough preparation if time will permit, is the most profitable thing that can be done in the way of getting ready to grow crops. Some years ago, one day when walking across some three or four year old meadows, I was astonished to be able to trace quite distinctly the marks of the plough made when preparing the land for seeding several years previous to my visit. I could, I believe, take you next spring and show you such fields in this very Canada of ours. Very small crops result from such preparation. The farmers who so handle their fields are the men who are responsible for the present low crop returns from our broad acres.

By Mr. Sproule:

Q. Before you leave that point, I wish to ask you one question. You say that by cultivation you raise the temperature of the soil. Have you ever attempted to ascertain to what extent you raised the temperature or whether you raised it very much or not?

A. Yes, I have made the experiment and have succeeded in raising the temperature four or five degrees.

Q. In a given time?

A. In about a day or a day and a half.

Q. That would be very desirable for corn because it requires heat in the soil above all other grain.

A. We find too that in growing corn if there comes rain when the corn is planted and the soil becomes cold, running over it with a harrow prevents evaporation, facilitates percolation and raises the temperature, then the corn comes up much more rapidly.

Q. It prevents the corn from rotting?

A. Yes, and hastens growth.

THE IMPLEMENT TO USE.

A great many farmers make the mistake of using unsuitable harrows, or using harrows which greatly increase the expense of the operation. For instance in many parts of Canada a spring tooth harrow is very commonly used for getting sod land ready for grain, whereas no worse implement could be found or devised for this purpose. One might think that all the powers of evil had been working to devise such

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an instrument for such a purpose. It does more to root up the soil, to leave it in bad condition for sowing, it does more to cause the farmer to leave his field badly prepared or half prepared for seeding, or in bad shape after seeding than any other method or instrument that I have ever seen in use. It is an exceedingly objectionable implement, yet I regret to say there are very many in use in Canada to-day. We could and we should—and I am glad to say we gradually are—substituting disc harrows in place of these objectionable spring toothed instruments of soil torture now in use. The best form of disc in my opinion is the double cutaway. This instrument has done a great deal to cheapen the cost of preparing the land and to improve the condition of it.

Q. Then, if I understand correctly, you object to the spring tooth harrow?

A. Yes.

Q. What difference is there between that and the cultivator?

A. A cultivator is an instrument we use as a rule when the land is in roots or corn to free it from weeds, or it could be used to rip up an unploughed sod field. It is an instrument for ripping up rather than preparing the land for grain. The spring tooth harrow is very commonly used to prepare sod land for seeding after it has been ploughed. It has the effect of filling up some of the interstices in the ploughed land. It also, however, rips up the sod and gives the land an exceedingly bad appearance at the same time, as it leaves it in bad shape for crop production. In getting land ready for seeding one absolute requirement is that the land shall be firm, that there shall be no open spaces anywhere below the surface. The spring-tooth harrow—not the spring-tooth cultivator, because you would not use that implement under such conditions—has the effect of making the subsoil full of openings, and should droughty weather come on shortly after the seeding is performed the man who has used such a harrow is sure to experience very considerable loss from poor crop returns.

By Mr. Thornton:

Q. Would you discourage the use of the spring-tooth harrow?

A. Yes, for sod the best harrow is the disc harrow. You should roll the land, then disc, then roll again and disc again. That is the best preparation for sod land, no matter what the crop to be sown. The use of the roller between the cuttings of the disc harrow is a practice we have found profitable and advantageous in the getting of land cheaply and quickly into condition for seeding. The roller packs the sod and holds it in place, the disc harrow cuts and pulverizes the soil and fills in all interstices in the ploughed land.

By Mr. Douglas:

Q. Does that apply all through Canada, to western land as well as land in the east?

A. In the case of Western Canada if you were breaking either meadow land or virgin prairie and decided to cultivate rather than to backset that would be true.

By Mr. Sproule:

Q. Would you not after the disc harrow, use a finetooth harrow?

A. Oh, yes, after you have got the soil packed down well and a good surface then the spike-toothed harrow is the proper treatment.

THE BROADCAST SEEDER NOT RECOMMENDED.

I would not use a broadcast seeder. The broadcast seeders in use in this country are another source of loss and a means of increasing the cost of crop production. They are dangerous implements just as are spring-tooth harrows.

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By Mr. Sproule:

Q. Why?

A. Because they sow unevenly, and when I say unevenly I mean that some of the seed is likely, in fact certain, to be buried deep in the soil, some less deeply, some with but a very light covering indeed, and more or less of the grain is sure to be left exposed. In this way from 10 to 50 per cent of the seed is likely to be lost and there is a danger of the crop that does grow being of lower quality or grade than would have been the case had a drill seeder been used. When sown right on the sod the seed very often slips down between the furrows. If the land be then worked down that seed is lost entirely. Then some is lost on the surface, being uncovered at all, some is buried deeply although not so deeply as to prevent growth and some buried but slightly comes up quickly. Thus, one gets an uneven growth right on through the growing season. One loses a lot of seed and gets bad results. The broadcast horse seeder is therefore, I say, an implement that should not be used in Canada. I am glad to say it is not used very extensively west of here, but east of here it is still much in evidence.

Q. Many farmers seed both ways. They seed one way with a lighter crop and then reverse the seeder and seed it the other way?

A. For grain?

Q. Yes.

A. That would be the ideal way to sow, but it doubles the cost.

Q. Yes, but they get the crop.

A. It is the way we sow all our grass seed, even though it does cost more, but we find it very profitable. As to sowing grain that way I have not considered that it would be worth the extra labour required. We sow our seed very cheaply. We use large implements at the farm and we sowed our grain last year for 15 cents an acre. Adding 15 cents more by sowing it twice would, I think, be a loss. I may say we have been able to get good results by not sowing before the land was thoroughly prepared. That is the important point.

By Mr. Smith (Middlesex):

Q. What sort of seeder do you use?

A. A single disc seeder, 20-marker.

By Mr. Chisholm (Huron):

Q. Can you explain to us why harrowing raises the temperature of the soil?

A. Yes, the explanation is simple. Land left undisturbed for any length of time forms a kind of crust or firm layer on the surface, as you will observe. Such a crust forms very quickly after a rain. Moisture comes up through the pores or small openings in this crust and evaporates. Now, to change a pound of water from water to steam or gas demands an enormous amount of heat. I am not in a position to say how much exactly, but probably enough to change the temperature of a square foot of earth three inches deep as much as 15 or 20 degrees.

Q. It becomes latent?

A. Yes. It takes an enormous amount of heat to change the water in the soil to vapour and the necessary heat comes in large part from the soil. As soon as you stop evaporation you prevent the loss of heat and thus give the soil a chance to warm up under the sun's rays.

Q. Another reason is that you blacken the soil?

A. Yes, that is another reason.

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THE ROLLER.

Now, as to rolling. The roller is an implement much misused in Canada. One use which might be made of it is in the preparation of the soil for seeding. I can hardly recall seeing a farmer in all these eastern parts using his roller in preparing his soil for seed. Nevertheless that is the best place to use it. It is in this connection that its use will be found most profitable and most effective. After the seed is sown, whether it should be used or not will depend upon the character of the land and the weather conditions. In very damp seasons it would be inadvisable to use it. In dry seasons using the roller after seeding then following with a light harrow again is the ideal treatment. Where seeding to grass with the grain crop, it is usually necessary to roll in order to get the small grass seeds covered. To bring moisture from the subsoil to the small grass seeds near the surface, that these same seeds may be under conditions suitable for plant growth, rolling is necessary and it is then seldom advisable to harrow after rolling. A subsequent harrowing with a light harrow might not do much harm when weather conditions were right. Where the soil is very light passing twice or three times with the roller after seeding has been found to be advantageous. Especially is this plan advisable in the case of black muck soil. I know of no treatment of black muck which will ensure as good results as rolling once before seeding and two or three times after seeding. There seems to be a lack of moisture near the surface in the case of black mucks. Repeated rolling compacts the surface soil and induces moisture to ascend to within a short distance of the surface, a very necessary condition. Under average weather conditions in Eastern Canada such a treatment is very necessary to get grass seed catch, and grass or hay is about the most profitable crop to grow on such soils.

THE SOIL PACKER.

In the west and in some places in the east we have another implement similar to the roller in its action on the soil—the soil-packer. It is of various forms, the subsoil packer, the surface packer and the combination packer. These three are all on the market, and I am not prepared to say which is best. We have a combination machine which we have found exceedingly valuable, especially in the preparation of corn land. Getting the land ready for corn is a difficult operation in the spring. It is, however, an operation which it is exceedingly important should be well done, and the packer we find of great value in this connection. It is an expensive implement at present, but probably the price will be reduced when the machine is better known and is more commonly used.

SPACING THE ROWS.

Now, the space between rows in the seeding is a matter of some importance. We find that 7 inches between rows suits best here. Many people in the west tell me that the 7-inch space suits there also, although on our Experimental Farms in the west we have not found that 7 inches was any better than 6 inches between rows.

QUANTITY OF SEED TO SOW.

This is largely a matter of opinion or possibly of season. We have seen exceedingly good results from sowing a bushel of oats per acre and just as satisfactory returns from sowing three bushels. The quantity to sow cannot be determined when the seeding is going on. The best rule to follow, I think, is to sow a moderate quantity, say $2\frac{1}{2}$ bushels oats per acre. If the season is very favourable with lots of moisture, lots of rain, then a light seeding is satisfactory. If the season is very dry, if there is insufficient moisture in the soil, then a larger quantity of seed is preferable. The safest rule is to sow a moderate quantity, $2\frac{1}{2}$ bushels of oats or thereabouts; in the case of barley, about 2 bushels per acre, and wheat about 5 pecks per acre.

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By Mr. Sinclair:

Q. How much grass seed would you use?

A. If you are using clover I would suggest about ten pounds of red clover, two or three pounds of alsike and ten to twelve pounds of timothy as a good mixture. At the Experimental Farm we do a little better or a little worse, adding five or six pounds of alfalfa seed per acre to the just mentioned quantities of seed. Alfalfa is a crop supposed to be difficult to get well started in many parts of Canada, but I find it can be readily started by adding a few pounds of the seed per acre to the mixture of grasses and clovers as land is put down to hay or grass. In that way it becomes almost a natural growth all over the farm. It is only on spots where water lies in the winter that it does not readily grow and last for years at the Experimental Farm at the present time. Twelve years ago it would not grow anywhere on that farm except on some small plots in front of the poultry house. Now, as you, who have visited the Experimental Farm in summer may have noticed, it will start to grow anywhere on the farm, and as just stated, will last for years where not drowned out in winter.

By Mr. Douglas:

Q. And at Indian Head also?

A. Yes, at Indian Head also.

By Mr. Thornton:

Q. How do you account for that?

A. It is the result of the inoculation of the soil by bacteria which makes the growth of alfalfa rapid and successful.

Q. You say you sow two or three pounds of alfalfa to the acre?

A. Yes.

By Mr. Sexsmith:

Q. And you think you can inoculate the soil artificially?

A. Yes, we have done it quite successfully.

By Mr. Douglas:

Q. You attempted the same thing at Lacombe, did you not?

A. Yes, we did.

By Hon. Mr. Owens:

Q. You use alfalfa along with common red clover in order to eventually produce a body of alfalfa?

A. Yes, for inoculating the soil with alfalfa.

Q. Would not orchard grass do? It would be easier to produce a heavy crop of orchard grass.

A. Yes, but I may say that I am not very much in favour of orchard grass for certain reasons. In the first place it gives only one crop a year. In the second place it is a bunch grass and it is difficult to get an even stand. In the third place it does not mature; it comes up too soon for our haying operations in the spring and early summer.

Q. It would come up all right with the alfalfa though?

A. Yes, with the very first cut of alfalfa.

Q. And you will get your two or three cuts of orchard grass with the alfalfa?

A. We have never been able to get much after the first crop.

Q. I am experimenting with a very small piece of ground. I was intending to put in fifteen acres or so of alfalfa this year, and the question to my mind was, what grass to mix with it.

A. Do you want eventually to let the orchard grass standing?

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Q. My idea would be to get the alfalfa to stand, but it will be necessary to inoculate it.

A. I would advise you not to sow such an extensive area of alfalfa this spring on that land. If you want to get that land eventually to produce alfalfa, my suggestion would be to seed it down in your regular way, adding two or three pounds of alfalfa seed per acre to the regular mixture you have been using. Then the next time you come round to the grass seeding year, you will have a good chance of getting that field down to alfalfa, and when you do that put it down to pure alfalfa; do not add any other mixture of grasses or clovers. An admixture of grasses or other clovers has the effect of eventually killing the alfalfa, the grasses and clovers being hardier in this climate than is alfalfa.

Q. But with a view of inoculating the land you put in the red clover with the alfalfa?

A. That is all right, that is very satisfactory, indeed, and makes splendid hay.

By Mr. Sproule:

Q. Is it not a fact that orchard grass kills alfalfa?

A. I think so, it spreads so much. Most grasses grown in Canada will in very few years kill out alfalfa.

By Hon. Mr. Owens:

Q. Alfalfa is very conservative, it wishes to monopolize the ground itself?

A. Yes, it does not like any rivals.

By Mr. Sexsmith:

Q. What success did you have where you put down two or three pounds of alfalfa?

A. The first year this was done on a field the alfalfa grew, although with a rather feeble growth, but apparently with sufficient vigour to provide for soil inoculation since the crop or catch has been invariably good on succeeding seedings. It is certainly the best plan I know of for inoculating the soil. It is a better plan for inoculation than the use of the bacterial preparations which are on the market. While these do good in some cases, very often the farmer who receives them is not sufficiently careful in following directions to get the best results. If you take a bag of inoculated soil from an old alfalfa field and scatter it on the land it is desired to seed down you get the inoculation almost at once without any trouble, because that soil being in a considerable mass conserves enough moisture in itself to preserve the life of the bacteria. We send out occasionally sacks of soil from fields recently under alfalfa, not only from Ottawa but from all our farms where alfalfa is grown.

By Mr. Sproule:

Q. If that practice becomes too prevalent you will soon give away your whole farm.

A. We gave away only a few tons last year. The farmers pay the freight. We furnish the bags.

Q. What has been your experience in pasturing alfalfa?

A. It is the best pasture there is.

By Hon. Mr. Owens:

Q. Not with cattle. For sheep and hogs it would be all right?

A. Not for sheep. Hogs pasture it down well. If you had happened to visit the Farm last year you would have seen three acres pastured by hogs. They certainly like it and do well on it.

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By Mr. Smith (Middlesex):

Q. I think you can qualify your observation in regard to sheep. I have had a good deal of experience in pasturing sheep on alfalfa. I always pasture our show sheep on alfalfa. Our whole flock are largely pastured in that way and we do not find that result; we do not find that it destroys the alfalfa.

A. That is true for this reason: Your show sheep are well fed and do not browse very closely. We have tried it at the Experimental Farm at Ottawa where very often we are short of grass, and I tell you that when the sheep get going down close there is not much alfalfa left. But if you can give your sheep a large enough area to ensure their having sufficient feed without eating too closely to the surface of the soil, there is no reason why it would not do well.

By Hon. Mr. Owens:

Q. Pasturing them on it for a very short time?

A. Or giving them a large enough area so that they will get enough food without browsing too close to the surface. I could show you a field of alfalfa that we had sheep on last summer, but we supplemented the pasture by giving them some cut feed. It was only a small field, but by taking this precaution they did not do any harm; if, however, you allow sheep to graze too closely they will certainly destroy the alfalfa stand.

By Mr. Todd:

Q. In what range of climate can alfalfa be grown?

A. That is a thing we do not know. Twenty-five years ago a Canadian who ventured the statement that alfalfa could be grown in the Northwest would have been laughed at. To-day we are growing profitable crops at Brandon, Indian Head, Lacombe and Lethbridge. At Lacombe it was doing splendidly last fall.

By Hon. Mr. Owens:

Q. Alfalfa can be grown twenty-five miles north of Ottawa?

A. I do not doubt it. I have seen it myself growing at Chicoutimi, Lake St. John, Que. It was not doing very well there, but I thought it was due to the preparation of the soil rather than to climatic conditions.

By Mr. Sexsmith:

Q. Is it not possible to procure samples of alfalfa that can be grown in the northern extremities of Canada?

A. We have secured samples from Northern Siberia which seem to be hardier than the common alfalfa that is grown in Ontario or in the Southern or Western States of the American Union. But we have not sufficient knowledge as yet to pronounce one way or the other. Alfalfa seems to be extending its habitat northward and undoubtedly has great adaptability. Its growth is certainly extending farther north and I hope to see the time when abundant crops will be produced in those parts of Canada where its cultivation cannot be depended upon with certainty.

By Mr. Sinclair:

Q. How many crops do they calculate on in Western Canada?

A. I went over a field last year at Indian Head where they had cut alfalfa for five years.

Q. I mean in one year?

A. You can count on two first class crops, and if the season is favourable, that is, if there is sufficient moisture, on three good crops.

By Hon. Mr. Owens:

Q. I think you are pretty sure of three crops if the ground is kept well manured?

A. We are sure of three crops here in Eastern Canada.

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By Mr. Henderson:

Q. If alfalfa is so valuable for pasture purposes why mix it with these other foods? The other crops may not mature at the same time and in that way you would interfere with the cutting of alfalfa.

A. Do you mean for pasturing on for hay?

Q. Or for other purposes?

A. Well for hay I do not advise to mix it, and I think if you had heard my answers to Senator Owens you would have heard me advise him not to mix alfalfa with anything else, but rather to sow it pure. We use from six to eight pounds of alfalfa, as much red clover, two or three pounds of alsike and six pounds of timothy per acre for our regular pasture mixture. That is for pasture for the first year.

By Mr. Sexsmith:

Q. Some experiments were conducted through the Experimental Union in the province of Ontario last year where quite a lot of alfalfa was sown late in the spring and a great crop harvested?

A. That is possible. You can sow it as late as the middle of July, and if you choose you can harvest a crop in the fall. I am not prepared to say that that would work a great injury to the crop. Three or four years ago I had six acres of alfalfa, I marked off three two-acre plots. On one I pastured sheep, not very many but just enough to keep it down a bit. From the second I cut a crop in the fall, and the other two acres I did not touch. The next year so far as appearances went one could not tell which was which. That is the only experiment in that line I have carried on, but it seemed to indicate that on some occasions at least, cutting the crop and harvesting it was not injurious. But I will say that generally speaking farmers and experts in the growing of alfalfa consider that it is not advisable to harvest the crop the first year. They deem it advisable to cut it in September, or a couple of months after seeding and let it lie on the field permitting the new alfalfa to grow up through it. In that way it forms a mulch that protects the roots of the young plants in winter.

By Mr. Smith (Middlesex):

Q. In the experiment you speak of when did you sow?

A. We sowed it at the time of seeding our grain in the spring. It had been started with a nurse crop. I might say that we cut about a ton of hay to the acre in September.

By Mr. Smith (Stormont):

Q. I understand the object of your mixing was to inoculate the soil?

A. I did not say that inoculation was the sole object of all our mixing, but that it is a method of inoculating the soil. The other object of our mixing is to improve the quality of our pasture. I might say further that we add small amounts of alfalfa seed to almost all our grass mixtures with a view to improving the hay crop and find that it is advantageous.

By Hon. Mr. Owens:

Q. Using alfalfa for feeding in the stable is advantageous?

A. Yes, quite.

Q. In that way you can take off four crops in a year?

A. Yes, by starting to feed very early in the season.

By Mr. Thornton:

Q. When the soil becomes once inoculated does it always remain in that state?

A. If you discontinued the growing of alfalfa for a long period of time I am not sure that the soil would remain inoculated. But if you ceased to grow it for two

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or three years and then sow the seed again, the soil would be found to be still inoculated.

Q. Does an adjacent field become inoculated also?

A. Yes, very likely the whole adjacent area would shortly become inoculated. A little flurry of dust flies over the neighbouring field and the soil becomes inoculated in that way.

By Mr. Chisholm (Huron):—

Q. What would you say in regard to using white clover in the west?

A. I am unable to speak as to that.

Q. Because that clover grows very freely around Prince Albert, where it has been brought in, I suppose from the east.

A. Do you mean what is called Dutch clover.

Q. I mean the common white clover.

A. The low lying stuff.

Q. It is of great benefit for pasture purposes on the prairie. Do you know anything about it?

A. We grow it at Indian Head, I am not sure about the other farms. I may say that in my work as Agriculturist I have not had much to do with the Branch Experimental Farms until lately, when I was appointed Supervisor of Experimental Farms, or Dominion Agriculturist.

Q. Will you please keep that subject in mind?

A. Yes. I noticed the clover you speak of at Indian Head last fall.

Q. At Prince Albert it is quite common.

A. I saw it on the streets of Prince Albert last fall.

Q. It seems to me that if inoculation was employed and that clover conveyed in some way to the ordinary pastures on the prairies it would be a great benefit to the growers.

A. It certainly would, we need the legumes out there, and we are gradually getting them, I am glad to say.

By Mr. Sexsmith:

Q. There is one question which I would like to return to. You gave a standard of prices for the average farmer in the early part of your address, and you also gave us a list of the amounts per acre that you produced last year, thus furnishing a standard which you said helped you in arriving at the values per acre of farm lands?

A. Yes, that was the standard.

Q. You spoke of \$2 per ton for corn?

A. Yes.

Q. I thought you had another standard also?

A. You are alluding to my earlier remarks when I compared our crops to the crops in Canada, and I used prices given in the 'Census and Statistics Monthly.' When comparing our own crops I use our own standard prices.

Q. But I am referring to the list you gave us this morning.

A. What I gave this morning is our own standard.

Q. I understand that the cost per acre for ploughing is \$1.06.

A. That is the average cost over the whole farm last year. The actual cost per acre ploughed is about \$1.50.

Q. \$1.06 is an extremely low figure.

A. It can only be an average. We had 173 acres under crop, of which area only about 125 acres was ploughed. Now, suppose the cost of ploughing was \$1.50 per acre, that would be \$185. Divide that by 173 and you get the average cost of the ploughing of the cultivated land about \$1.06 per acre.

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Q. I quite understand, but still the figures would be rather deceptive going out in that way to the farmer. You get the actual ploughing done for a low rate.

A. As a matter of fact we cannot plough an acre of land for that sum, but that is what it costs us on the average. All figures given as to cost of operations are averages, and as such are absolutely correct.

By Mr. Best:

Q. You say that your profits were \$4 per ton in the case of straw?

A. Not profits, but that the straw was worth that sum per ton, in our estimates, we reckoned it at that.

Q. Is that not deceiving to the farmers?

A. No, straw is worth all of \$4 to the average farmer in Eastern Canada.

Q. Is the giving of such averages not misleading?

A. It probably appears a little mixed to a man just listening to the statement, but if you will take the trouble to read the information you will see what is meant. In comparing the values of our crops with the average Canadian crop, we use the same prices in calculating our returns as are used in the case of returns from Ontario. In comparing one year's crop with another as grown on the Central Experimental Farm we use our own prices fixed upon twelve years ago, viz.: Hay, \$7 per ton; straw, \$4 per ton; grain, 1 cent per pound; roots, ensilage and green feed, \$2 per ton.

* SUITABILITY AND THOROUGHNESS OF CULTURAL OPERATIONS.

To sum up what I have said about suitability, thoroughness and so on. The farmer must get into his soil an abundance of plant food, must make it available and must get warmth and moisture.

You may get all these things by the proper cultural methods and the following of the proper rotations. I do not hesitate to say that in Eastern Canada at least by following proper rotations and performing the necessary operations at the right time, we need never suffer from drought except on very open gravelly soil.

THE QUALITY AND VARIETY OF SEED.

I need not dwell upon the quality of the seed, because you know the importance of that.

As has been amply demonstrated times without number, the kind of seed sown has no small effect upon the crop returns from a given area.

In the first place good, plump, well matured seed should be used. Such seed gives better returns per bushel sown, produces a more even stand of grain that ripens more uniformly.

The variety to sow will depend upon the locality and no farmer should be content with this variety until he is sure it is the best for his conditions. It should be the best both as to quantity produced and quality of grain harvested.

Then the peculiar fitness of a variety as a disease resistant sort is important. This, however, opens up such a large and unsettled question somewhat out of my domain, that I had better say no more on the subject.

HARVESTING METHODS.

Many farmers sustain great losses through faulty harvesting methods.

Hay is frequently cut much too late in the season. A somewhat greater weight is harvested on this account, but always of inferior quality both as to palatability and nutritive value. Often it is improperly cured before housing; this, too, is a source of loss.

Alfalfa should be cut just as it begins to blossom; red clover when in full bloom, and alsike at about the same stage. Timothy, orchard grass, blue grass, brome grass

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and most other grasses should be cut inside of a week after blossoming. Hay cut at this stage is somewhat harder to cure, but is worth very much more per acre and per ton than when allowed to stand till ripe or nearly so, as is too frequently the practice of our eastern farmers.

Grain also should be cut when on the fresh side, it should if possible be threshed when being drawn in. Such methods are of course the rule in the west, but in the east much loss is incurred every year by housing grain and threshing later on in the season.

Corn for silage is usually allowed to stand as long as possible. It should of course be in the dough or early glazing stage when cut. The forage is then worth much more than if cut earlier.

Roots are usually harvested in an expensive way. A study of methods of handling roots at harvest time would well repay any farmer.

COST OF CULTURAL OPERATIONS.

The cost of cultural operations is a thing I want to dwell upon. This is a factor, which, taking Canada as a whole, is most productive of high cost of crops. In the first place our farmers do not seem to believe in the economy of good cultivation. Now, good cultivation as I have already stated, is the most important factor imaginable in lowering the cost of production. Fifty cents or a dollar's worth of extra work on an acre is very sure to lower the cost of the return per bushel or ton. Or, in other words, 50 cents extra worth of labour might easily mean five dollars extra worth of crop. That is my own opinion, based on experience and close observation during the last twelve years.

By Mr. Douglas:

Q. That is up to a certain point?

A. Up to a certain point and I have never yet seen that point passed.

By Mr. Best:

Q. But it can be passed?

A. I suppose so. A man might keep on working a field forever, but there are not very many of our farmers likely to do that.

By Mr. Smith (Middlesex):

Q. There would be a great difference though if a farmer continued each year to cultivate properly. He would after a time reach the desired point more quickly in a given year than a man who did not do that?

A. Undoubtedly, because performing the cultural operations thoroughly each time means less labour to get the land in proper tilth on each successive occasion until you attain to the easiest conditions imaginable.

By Hon. Mr. Owens:

Q. On very light soil there would be difficulty in over cultivation?

A. Yes, there is some danger there.

Q. You spoke a moment ago with reference to spring ploughing?

A. For a crop of corn.

Q. That would be all right on light soil, but would you advise it on a clay soil?

A. We have about twenty acres of very heavy clay soil at the Central Experimental Farm and we have tried spring ploughing on that soil without noticing any great difference.

Q. Did you find that with spring ploughing?

A. We found it equally as good as fall ploughing, ploughing shallow of course.

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WISE ECONOMY OF TIME AND LABOUR.

Now as to the importance of making the best use of time and labour. Many of our farmers have small irregular fields. But in order to reduce the cost of cultivation an absolutely necessary arrangement is to get good large regular fields. Then, we must increase the power, get heavier horses and more of them. The idea of one man, and in some parts of Canada, two men, going around with one horse is ludicrous and it is the best possible method of doubling the cost of production per ton or per acre. What gives the best results in my own experience is the use of four horses or six horses with one man. Then the cost of the operation performed is cut in two or better. Just to illustrate.

Last year I took a machine, a common disc harrow, on which we used two horses, to get one-third of a certain piece of land in shape for cropping. To prepare this it cost 90 cents per acre. With a heavier disc that took three horses, on another third of the field, it cost me 80 cents per acre. And then I took a double cutaway disc that required four horses and got as good a job done for 45 cents per acre. I cut it down to 45 cents actually in half, by putting on greater power and using the right machine.

By Mr. Henderson:

Q. Did you calculate anything on the additional horses?

A. Oh, yes, calculated for everything.

By Hon. Mr. Owens:

Q. Did you charge for the feed for the horses?

A. Everything.

By Mr. Henderson:

Q. Suppose you had used twice as many horses, could you not have done it for nothing. I think that is the logical result of your argument?

A. Just following that up logically or mathematically, if you use twice as much power that would reduce the cost to 22½ cents per acre, and twice as much again to 11½ cents per acre. I do not know where to stop, but this would probably be approximately true up to a certain point. My point is that if we use greater power we certainly can reduce the cost to a much greater degree even than I have mentioned. Then, as to the cost of ploughing. We ploughed last year with a single plough and it cost us \$2 to plough an acre. With a two-furrow gang plough it cost \$1.25.

By Mr. Sexsmith:

Q. With as good results? Many farmers are prejudiced against the gang plough?

A. That is a great mistake. I can take a gang plough myself and do just as good work as the average man with the walking plough, and I have seen men who could do work with the gang plough and you could not tell it from the walking plough work.

By Mr. Sproule:

Q. Don't you find that where you are on somewhat gravelly soil and you have two shears, one of them strikes a stone and knocks both furrows out. You disturb two furrows.

A. That is right, get rid of the stones.

Q. It is not properly turned over generally?

A. If you meet with accidents like that there is a double danger. But on the prairies we have no stones and we should not have many stones on our arable land in Ontario, because we have been on it long enough.

By Mr. Sexsmith:

Q. I saw a few taken out a year or two ago at the Experimental Farm?

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A. We are taking them out every year. We have been taking out stones for the last twenty-five years, and we took out last year, I suppose, 150 tons. You have to keep working them out.

Q. There are a great many in Ontario

A. Stones give trouble, I must admit. Still they do not constitute an insurmountable obstacle to the line of improvement I have suggested. In the west traction engines and gang ploughs are being used. We have one bought for the Central Experimental Farm here at Ottawa, and I propose to see what we can do in that way to lower the cost of cultural operations by dragging five or six ploughs at a time and possibly a disk harrow behind them.

By Mr. Smith (Middlesex):

Q. In computing what that would cost, what do you allow for the keep of a horse per year?

A. It costs 45 cents per day. We charge 60 cents a day for horse labour, and all figures as to cost of cultural and other operations are figured at that rate, 60 cents per day.

By Mr. Sproule:

Q. Does that cover shoeing?

A. Everything.

By Hon. Mr. Owens:

Q. That would be \$150 a year?

A. No, about \$180 a year, we allow 60 cents a day, but it really costs us only 45 cents. It varies a little.

By Mr. Smith (Stormont):

Q. I suppose on the ordinary farm the difficulty would be this, while you would pay that for the few days you are busy, what would you do with the horses for the rest of the year?

A. You can employ them profitably until the last days of the fall on the land for one operation or another. In winter you can employ them in hauling out your manure and, of course, there is always more or less trucking about to do. There will be a certain loss, however, to the average farmer. In our case there is no loss.

By Mr. Thornton:

Q. You don't use more but less man-power?

A. That is the point. We use greater power and less directing intelligence. Therein lies the advantage, and I believe that the more improvement we can make at that end the better will be our results. Wherever we have tried it we have been more than satisfied with results. Our seeding used to cost 30 cents an acre. Last year and for three years it has cost us only 15 cents per acre, because we did 20 acres a day instead of 10 as we used to do with the small seeder. We use larger harrows, larger ploughs, larger binders. Every machine is the biggest we can get in this part of Canada, and the result has been to lower the cost of our cultural operations by between 30 and 40 per cent. Now, I think that is a point well worth the attention of every farmer in Canada. In my estimate of the cost of growing crops I said that it would take \$9.60 per acre. That is an average, taking it in the west and in the east. If we had been able to figure as conditions are in the west we could have reduced that by \$3, but we had to consider the east. I could show you places in the east, and not far away, where it is not \$9 or \$10, but \$15 or \$16 per acre it costs just because they are using single horse machines, ten-row seeders, four feet mowers, &c.

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In drilling up our land even we do not drill up one row at once. We do three rows at a time. Everything is done with as large machines as possible. Increase the power, increase the size of the implements, and decrease the cost of directing. The cost of directing power or men's wages is, as you know, the chief item of expense in most operations.

By Mr. Sexsmith:

Q. Do you think that would pay on a hundred-acre farm?

A. Yes, it would pay on any farm over 50 acres. I would not, of course, advise any farmer to throw away his small machines before worn out or nearly so. But when he throws them away as no longer useful he should try to get larger or more effective machines; that is, do something to lower cost of production in this way. When he goes to buy a seeder, he should buy a big one. It might be that his farm was divided into small fields. Small fields are expensive; get the fields as large as possible and then use large machines.

Q. Take a farm of 50 acres that was in two or three fields?

A. On such a farm large machines would be the proper thing. There is nothing better than a four-year rotation on a fifty-acre farm. The smaller the farm, the shorter the rotation.

By Mr. Smith (Stormont):

Q. I know a farmer who followed your idea and he claimed with great advantage.

A. Undoubtedly if we could just gradually eliminate all the small machines found in the east it would be a great thing. I am glad to say there are none in the west; they are all 'wise' there, if I may use that expression. They have there four and six-horse machines, and as a consequence they do their work very much more cheaply than we do, even though the wages are higher in the west.

By Mr. Sproule:

Q. Do you not often find that in many places where the ground is very irregular these large machines do not work well; that is, when they are getting on very uneven ground?

A. There is a little danger of that, especially in the case of binders some little difficulty is experienced in that connection, and in the use of the large disc harrows.

Q. And the seeders?

A. Yes, in the case of seeders too, there is sometimes some slight difficulty. Remember I said that probably for small farms a sixteen marker seeder would be large enough, but for our work, I feel that we must have a twenty marker to give good results.

COST OF PRODUCING THE CROP UNIT.

An hon. member asked me about the cost of putting these crops in the barn. I have here a statement giving the result of our operations for last year. Our hay cost us, the cheapest hay we made—this I might say pays for the seed and for all labour in connection with it, \$3 for rent, and \$3 for manure per acre—was \$2.75 per ton and the dearest hay we made was \$4.80 per ton. As to grain the cheapest oats we grew, we grow oats only on this farm, cost 14 cents a bushel and the dearest oats we grew cost 31 cents a bushel. These different prices are not due to difference in fertility of the soil, but rather the cost of labour, and in one or two cases to some special experiments that we were carrying on in certain fields. The average price of the hay was around \$3 or \$3.15 in the barns and the average price for oats was around 25 cents a bushel.

Q. In making up that average price do you count anything for the straw?

A. No.

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By Mr. McColl:

Q. Have you any estimate per acre?

A. We know what every acre costs us.

Q. What would be the average cost per acre?

A. This year it was \$12.65.

Q. Is that for grain?

A. No, that is the cost per acre for all crops on our farm, hay included. Is it the cost per acre of growing certain crops you want?

Q. Yes.

A. I cannot give you that to-day for last year; I have that in our reports for different years, but I have not worked it out yet for last year. In fact, it did not occur to me to do it for this committee this year. Details of the cost of producing every unit of crop are given in my report each year. I can give it to you for 1909 if you wish, it is in my report for that year.

Now we put our corn in the silo in 1910 at anywhere from \$1.12 up to \$1.61 per ton. The average cost was a little lower this year than it has usually been, it was about \$1.25, it usually costs us about \$1.40, which is the average for ten years. The reason why it was a little lower this year I think is that we did not have as much trouble with weeds, it was a dry year and hoeing cost less. For roots cost ran from \$1.15 up to \$1.92 a ton in the root house, with an average of about \$1.65. Now our roots this year were a little cheaper, also, although they were not as good a crop as usual, the hoeing was a great deal less because we had in July and August a long dry spell during which neither the roots nor anything else grew, so that we did not have any hoeing, we cultivated only and that cut off a very considerable sum from the cost of our hoeing operations. But on the average it costs us nearly \$2 per ton to put the roots in the cellar, \$1.40 for corn, \$4 a ton for hay and $\frac{2}{3}$ of a cent per pound for oats.

Q. To grow a pound of oats?

A. Yes, $\frac{2}{3}$ of a cent.

By Mr. Smith (Middlesex):

Q. If oats were selling at 20 cents?

A. Twelve years ago, when wages were lower we were paying only \$1.25 a day for a man and we were producing oats at 18 and 19 cents, but now wages have gone up and it costs us 25 cents a bushel. The wage factor is a very important one in influencing the cost of production.

By Mr. Todd:

Q. When you speak of humus you claim that the great advantage of humus is is to conserve moisture, do you not?

A. The advantages of humus are first to conserve the moisture, second the opening up of compact soils, third the binding together of loose soils, fourth the supplying of plant food to plants in available form, and fifth the making of that plant food available and the warming up of the soil.

Q. If you have a good supply of humus in the soil would you consider it necessary to do so much tile draining?

A. I would consider it necessary; in loamy soil it might not be necessary to drain with tile provided you have a fair fall and could use ditches. It will however pay; I will say this that I have never seen the soil that could not be improved by draining even if it is on a nice slope.

Q. In the case of a runout farm which might be bought, do you think it is possible through simply growing clover and turning it down to bring that farm back into a fertile state without working it and growing crops? That is by growing clover and

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turning it in would it make that soil rich in humus after a course of four or five years?

A. You mean by growing clover and leaving it there?

Q. Yes, supposing you had a broken down farm would it not be practicable in this eastern country to restore its fertility by doing that?

A. I cannot say, but would not think it. I would prefer to grow clover and feed it on the farm. If you can get a good crop of clover and turn it under your farm is not really run out, it is ready to produce a crop of grain. The difficulty is to get the clover started. If you could buy a farm reputed to be run down and that farm will produce clover it is not run down. I may say that with regard to getting good crops of clover there are areas in eastern Canada where clover will hardly grow at all, such land is run out.

By Mr. Smith (Stormont):

Q. Supposing you strike a broken down farm which will not produce clover, which is the best way and the cheapest of restoring fertility?

A. Start with a crop of buckwheat, if anything on earth will grow buckwheat will, let it grow until it is in flower, then turn it down with a very shallow furrow, and if it is late in the season work it well all the rest of the year. If it is not very late you might sow something else, or buckwheat again for that matter, and then turn it down again with a little deeper furrow. Next year sow some legume, sow some peas and oats and pasture it off, do not cut it but pasture it off, and after the probabilities are that you will get a catch of clover and probably a very good one too.

There are some very poor soils in Canada as well as some very fertile areas. On our Experimental Farm in Nova Scotia the land as it is cleared from forest is absolutely barren. The land as it comes out from underneath the crop of fir trees seems to have lost all the plant food that ever was in it. There is no humus on the surface; it is certainly the worst proposition in the way of run out land that you can imagine. There is practically no humus, there is nothing to build up and you have to start in and make a layer of soil suitable for crop production, rather a slow process it is, too.

By Mr. Thornton:

Q. In our part of the country clover was a failure for years and years?

A. What part is that?

Q. In Durham county, 60 miles east of Toronto. But lectures were given through the medium of Farmers' Institutes and the lecturers at the meeting advised the farmers to top dress, even lightly, with barnyard manure. I never knew a failure to get a catch of clover where the land was top dressed.

A. That, of, course, is the proper way to do it.

Q. Even supposing the land receives only a light top dressing?

A. But how would you do that where you have not got the manure? We admit that with the aid of manure you can get a crop of clover started.

Q. With a light dressing you are sure to get a catch of clover, and once you get that you are all right?

A. That is very true, but you must have the manure first.

By Mr. Smith (Middlesex):

Q. Speaking of heavy clay land will tile drains operate all right?

A. Yes, you will notice rapid operation the first year. The second year it will not be quite so good, the third year it may not be any better than the second, but the fourth year and in succeeding years they will work all right. It takes some little time for the water channels to form as it were.

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By Hon. Mr. Owens:

Q. In clay lands you have the best results?

A. Yes.

THE CHAIRMAN.—I am sure, gentlemen, we have listened with a great deal of pleasure and profit to Mr. Grisdale's address, and I hope that it will receive the widest possible distribution.

Committee adjourned.

Certified correct,

J. H. GRISDALE.

RAVAGES OF BLACKHEAD IN TURKEYS

HOUSE OF COMMONS,

COMMITTEE ROOM, No. 34,

WEDNESDAY, February 8, 1911.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock a.m., the Chairman, Mr. Schell, presiding.

The CHAIRMAN.—As you will notice from the Order Paper, we are to have an address this morning from Mr. A. G. Gilbert, Poultry Manager, Central Experimental Farm, on 'Some instances of the far reaching ravages of blackhead in turkeys.'

Now, poultry raising is generally considered one of the minor branches of agriculture, and yet any of us who have given any attention to the subject know that it is one of the sources from which we derive a large portion of our agricultural wealth. I have not the figures showing what the poultry business represents in Canada at present before me, but it amounts to a good many million dollars. All will admit that the field is very large and one that will repay intelligent cultivation. We are glad to have with us this morning Mr. Gilbert, who is in charge of the poultry department at the Central Experimental Farm. He has not been before us now for three or four years, and I presume will have some new and valuable information to convey on the subject of his address. I have very much pleasure in calling upon Mr. Gilbert to address the committee.

Mr. A. G. GILBERT.—I have much pleasure in coming once again before your committee. A committee which, I am happy to say, has always taken an interest in matters affecting the poultry interests of the country and incidentally the work of my department.

This morning, with your permission, I propose to discuss, and briefly, the far reaching ravages of blackhead in turkeys.

Perhaps at this point I had better explain the nature of the disease—commonly known as blackhead—which has caused such enormous loss to the farmers of the country, and the fatal nature of which has made turkey raising a matter of no little difficulty. It has also been the subject of recent inquiry in parliament.

DESCRIPTION OF THE DISEASE.

One of the best and shortest descriptions of blackhead I have seen is the following:—

'Blackhead is a disease that has destroyed turkeys in every part of the world. Blackhead is caused by germs that have been permitted to gain the ascendancy over the vitality of the fowls. So long as the turkeys were strong and vigorous they were able to contend against this bacterium without being injured by it, but, as the result of careless in-breeding, neglect of stock, filthy surroundings, attempting to grow hogs, sheep, chickens, cows and turkeys on the same piece of ground, the constitution of the turkeys has been weakened to such an extent that they cannot resist the onslaught of the disease. There is no cure for blackhead except to weed out the birds that are attacked by it, bring in new stock, clean up the premises, and create sanitary conditions that will foster the growth of the turkeys.' I now desire to show the wide spread ravages of this disease

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THE EXTENDED RAVAGES OF BLACKHEAD IN CANADA.

In reading the following letters received from correspondents in different parts of Canada, I do not wish to play the part of an alarmist, but I think it is for the best that your committee should have a correct idea of the far-reaching ravages this disease of blackhead has made among turkeys in all parts of the country. I will read first a letter from Mrs. Harvey True, of Lincoln, Queens country, N.B., dated September 15, 1910, as follows:—

‘I am writing to see if you can give any information regarding that disease of turkeys called ‘Blackhead.’ I had 47 turkeys, but they have gradually died off, until now I have only 9. They were nearly all full grown. I have tried different things without success.’

She was advised, in reply, to send a live but sick bird to Doctor C. H. Higgins, Bacteriologist, Veterinary Laboratory, which is situated on the Experimental Farm not very far from our poultry building. In a subsequent letter, dated October 22, seven days later, she asks:—

‘How would I send the sick bird, and who will pay the transportation charges? Please let me know, as some of my neighbours have lost their whole flocks. We are anxious that something should be done or we will have to give up turkey raising. Thanking you for the attention given my complaint.’

Letters were also received from W. S. Poole, St. Stephen, N.B.; A. A. Peters, Elmhurst, N.B., and James A. Steves, Salisbury, N.B., all stating that they had lost many turkeys which had died after moping about from diarrhoea and spotted livers. The evacuations were of a yellow colour in the first stage, and previous to death of a greenish tinge. We now go from New Brunswick to Manitoba. Writing on August 3, 1910, from Thornhill, Man., Mrs. James Torey asks for Bulletin 54 on poultry keeping, and states: ‘I have lost *sixty* turkeys this year from blackhead. Please send the best information you can.’

Many instances of loss in Ontario could be given. Perhaps one of the greatest sufferers in the province we heard from was Mr. George Robinson, of London South, and who was very anxious that some measures should be taken to stay the great loss to the farmers by the disease.

Raphael Laplante, of St. Constant, La Prairie county, Quebec, wrote that he hatched 148 turkeys and on October 14, 1910, had only 72 left.

As to an estimate of the loss sustained, I quote from Mrs. Harvey True, of Lincoln, N.B., who says:—

‘I sold 15 turkeys last year which brought me \$50.55. I got 25 cents per pound.’

A good price, but doubtless the birds were fine. I think an average price of 20 cents per pound may be quoted as the prevailing city market price of last winter.

WHAT WE HAVE DONE IN OTTAWA.

On reception of the letters from Mrs. Harvey True and Mr. George Robinson, of London South, I took them to Doctor Charles H. Higgins. Dr. Higgins for some years past has very kindly examined and reported on many cases of diseases of turkeys and fowls; these reports having been officially and according to departmental routine, made to Dr. Rutherford, chief of the division, and who has most courteously forwarded to me copies of them.

A turkey was duly received from Mrs. Harvey True, of Lincoln, N.B., and on examination by Dr. Higgins was found to have blackhead.

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Five other turkeys were purchased by the department from the affected flock of Mrs. Harvey True, at the suggestion of Dr. Higgins, so that he could experiment with them with the view of, if possible, carrying the afflicted birds over the acute attack and later find a preventive, while he did not expect to find a cure. It is evident to you that if any remedy or treatment can be found to prevent the development of the disease, that something has been gained.

I may say that the turkeys which are being treated by Dr. Higgins and which, it may be remembered, came from Mrs. Harvey True's badly affected flock, did at first shown symptoms of sickness. I am permitted by Dr. Higgins to say that he treated them with a teaspoonful of muriatic acid to a pint of drink water, and up to this time they have shown no outward symptoms of the disease. Dr. Higgins may kill one of these apparently healthy birds in order to find out whether there are internal symptoms of the disease, which being latent might develop at a later period.

This phase of the disease is one of its most mischievous features, for a farmer might purchase a bird apparently sound, to have the disease show itself later on.

By Mr. Best:

Q. Have you any information as to when this disease was first discovered in turkeys in Canada?

A. I appeared before this committee in 1900 and my evidence was more particularly in regard to blackhead than anything else. In 1889, the year previous, I had prepared a report, a copy of which I have here, which also fully treated of the disease. Some of the members of this committee may recollect that a question was asked in the House some weeks ago in regard to this matter, and in reply to the question the Minister of Agriculture stated that a report dealing with the disease had been prepared at the Experimental Farm in the year 1899. But little was known of the disease at that time and the only treatment recommended was bi-chloride of mercury or corrosive sublimate, a small portion in the drink water. Since then very little has been done in Canada, but a great deal has been done in the United States in the way of investigation. Perhaps you will allow me to read from Bulletin 141, issued by the Rhode Island State College, to show the effect of the disease on turkey raising in that state. It gives the results of an investigation by Messrs. Leon. J. Cole and Philip B. Hadley, with the assistance of William F. Kirkpatrick. (Reads):

'Turkey raising was at one time one of Rhode Island's best known industries. Now, however, this industry has almost vanished since, with very few exceptions, the Rhode Island farmer has given up his attempts at turkey raising. The islands of Narragansett bay are turkeyless, while the Block island, which thirty years ago was able to supply the Thanksgiving market with no less than 20 tons of turkeys, not 500 pounds have been shipped annually for many years. The main cause of this deplorable condition is blackhead, which was first noticed in Rhode Island some time previous to 1893, and which has all but annihilated the turkey industry in New England. It has now spread, moreover, with ravaging effects to almost every state of the union.'

From this you can form an idea of the havoc wrought by this disease to the poultry interests of that state. Coming back to Canada, I remember that some years ago two farmers who were among a picnic party from the eastern townships to the Experimental Farm came to my office. One of them said to me: 'I would like to know what the trouble is with my turkeys. We cannot raise them in our district.' In reply to the query as to the nature of the trouble, he replied: 'It seems a sort of cholera and is particularly hard on young birds. My neighbour here has not been able to raise turkeys for two years.' Although we knew very little of the disease at that time it was, doubtless, blackhead that was the trouble. Dr. Theobald Smith, of the Harvard Medical School, who is considered one of the ablest scientific authorities, in 1893 studied the disease and determined that it was caused by an *Amoeba*,

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one of the lowest forms of animal life. He named the disease *Amoeba Melgreadis*. This parasite, according to Dr. Salmon, is taken into the digestive organs with the food or drink and attacks the mucous membrane of the cæca and multiplies quickly, causing inflammation. Associated with this is serious disturbance of the liver, which is enlarged in most instances to twice its normal size, and is covered with round discoloured spots. Hence its name 'Spotted Liver.' I have here a coloured illustration. The progress of the disease is more rapid in some cases than others, but death usually follows.

SYMPTOMS OF THE DISEASE.

The symptoms of the disease are as follows:—

First.—Lack of appetite, weakness, emaciation.

Second.—Constant diarrhœa, usually from the first. This diarrhœa is caused by the inflammation of the cæca.

Third.—Half stupor, with an inclination to keep away from the rest of the flock.

Fourth.—In most instances discoloration of the head as the disease advances; hence the name, 'Blackhead, but this is not strictly correct, as the discoloration is not always present.

An alarming feature of the disease is, that is it not until it has got firm hold of the bird that signs of sickness may be observed. It is then too late to save the turkey.

The disease makes great headway in the midsummer months; actively so if the season be damp. I had rather a disagreeable experience in connection with the later development of the disease. A gentleman wrote me from Manitoba that he had bought a turkey cock and two hens, I think he said from some point in Ontario, and that he had scarcely received them when they showed signs of sickness and later died after moping about for some time. I wrote back to say that probably the birds had died from blackhead and possibly they were infected before they were sent him, although showing, then, no sign of disease. He evidently wrote to the man from whom he had bought the birds, and what he wrote I cannot say, but the man who sent the birds wrote to me a very indignant letter saying 'that he was a man of principle and would not sell diseased birds' if he knew it. I replied that I did not mean to reflect on him, owing to the peculiar nature of the ailment that the birds might be affected and not show it.

Young turkeys are most susceptible, although the disease attacks turkeys of all ages. With drooping wings and heads and tottering gait the sick bird, previous to death, presents a truly pitiable appearance.

By Mr. Best:

Q. If these birds were killed immediately after the disease was noticed would it hurt their food properties?

A. That is a moot question. In such cases I give myself the benefit of the doubt. As in many other instances, some authorities say no, while others say yes. Personally I have an objection to running the risk of eating cooked bacteria in any shape or form. As I have already said that despite prolonged investigation by the United States Bureau of Animal Industry, beginning in 1893, and the efforts of Dr. Cole and P. B. Hadley, of the Rhode Island Experiment Station in 1907-9, and in Canada of Dr. C. H. Higgins, bacteriologist of the Veterinary Laboratory of the Health of Animals Division, Department of Agriculture, no cure has yet been discovered for the disease. It is true that we think there has been found some means whereby the disease may be checked or held in abeyance, but nothing has been discovered so far which could be positively stated to be a sure preventive. The five turkeys under the muriatic treatment by Dr. Higgins are being watched with interest.

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A Canadian investigator, Mr. John Baynes, of the Truro, N.S., Agricultural College, who has evidently given some attention to the disease, writes as follows:—
 'Too much stress cannot possibly be laid upon cleanliness; for by cleanliness only will the disease ever be eliminated from our poultry yards. I have frequently taken infected flocks, killed them off entirely, thoroughly cleaned and disinfected the roosts and houses, picked out fresh lands free from possibilities of infection, started a new stock, and have built up by frequent visiting and inspection and rigid enforcement of sanitary conditions a healthy and remunerative flock of birds. So long as the conditions were maintained the birds remained healthy, but in several cases carelessness or lack of attention to small details of hygiene spelt subsequent disaster.'

By Mr. Henderson:

Q. Just at this point. I think you are perfectly right in devoting your attention to the cause of the disease and trying to find a remedy. Does this disease exist among your birds at the Experiment Farm here?

A. We do not keep turkeys at the Central Experimental Farm, but as I have already stated, there are five turkeys which, it may be remembered, came from Mrs. Harvey True's badly affected flock under experiment by Dr. Higgins, the bacteriologist of the Veterinary Department. These birds were procured by the department for observation and treatment in the interests of the farmers of the country, who are writing so many letters of inquiry to us in relation to this disease.

Q. I was under the impression when you spoke of in-breeding and lack of cleanliness as being among the chief causes of this disease, that such causes could be avoided at the Experimental Farm where you have every opportunity of changing the eggs and preventing in-breeding and of insisting upon cleanliness in your pens.

A. I cannot speak so decisively about turkeys for the reason that we have never had them. I can, however, speak authoritatively on the benefits of cleanliness as applied to other stock. We can, as the honourable gentleman has just said, prevent disease by adopting rigid methods of cleanliness; but in spite of all that this particular disease is so widespread that we have every reason to believe it is not confined to turkeys. In fact, some authorities say it is found in fowls and chickens. Whenever a fowl is attacked with symptoms such as to lead to the suspicion of tuberculosis, blackhead, or, in fact, disease of any kind, we send it to Dr. Higgins, who very kindly examines the bird. It is of the utmost importance, as you will readily see, that any instance of the inroad of this disease into the flocks of domestic poultry at home or throughout the country should be grappled with and if possible checked. I think you will agree with me that great loss is occasioned to our farmers from the death of so many of their turkeys, and I have taken up this particular subject this morning in the hope of not only interesting the committee in this disease, but also with a view of distributing information among the farmers as to preventive measures which might tend to check the disease, although a positive cure cannot be named.

PREVENTIVE MEASURES.

Preventive means are recommended in Bulletin 141 of the Rhode Island Experiment Station, viz.:—

1. Careful inspection of all new stock. The new stock should be purchased where the disease has never made its appearance.

2. The turkeys should be kept if at all possible by themselves. Give them fresh ground every two years.

3. Every bird should be kept under strict observation. A bird showing the slightest sign of sickness should at once be isolated and closely watched.

4. Yards and premises should be kept free as possible from English sparrows, and the poultry house from rats and mice. It has been shown at the Rhode Island Station that these rodents carry the parasite.

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5. Fatten birds slowly. Heavy feeding does not cause blackhead, but it does frequently cause the sudden death of a bird in which the disease is present.

6. If a bird dies of blackhead it should be promptly burned or buried; better to be burned.

By Mr. Sharpe (Lisgar):

Q. Why do you not keep turkeys at the Central Experimental Farm?

A. I am not an executive officer. But we really have not room.

By Mr. Henderson:

Q. Cannot you recommend that turkeys be kept for the purpose of experiment?

A. I could, but the committee has recommended once or twice; once, I think, at the instance of the honourable member for Peel, that turkeys be kept on the Farm, but I cannot see how such can successfully be done until we have more ground. We have two acres devoted to poultry at the Central Experimental Farm. At one time the committee recommended that the area of our ground be increased to 25 acres. However, it has not been found convenient to carry out that recommendation.

By Mr. Sharpe (Lisgar):

Q. Would not two acres be a large enough area for you?

A. For experimental purposes up to recently this area has been found very useful, but we have found that if the ground becomes poisoned it is a matter of very great difficulty, if not an impossibility, to raise chickens satisfactorily. The present two acres would be invaluable to a bacteriologist for experimental purposes as it has been in use for many years.

Q. But for your purposes at the present time, how much land do you think you ought to have?

A. I should like to have a complete change of ground and much larger area.

Q. How much land do you think you would require?

A. It would depend altogether upon the scope of the experimental work undertaken. When we established the poultry division on the Experimental Farm in 1887, we were considered ahead of all the poultry departments on the continent, but Cornell University has in recent years established a poultry department of eighty acres extent; in fact, the managing authorities bought a small adjoining farm which is devoted to poultry. The poultry department is in charge of Professor James E. Rice, who has five assistants, two of whom are bacteriologists. They are now going extensively into poultry experimental work in all its different branches.

By Mr. Lennox:

Q. You have two acres at the Central Experimental Farm devoted to poultry, and I understand you to say the ground has probably become poisoned. Now, if that is the case, is it not absolutely necessary that there should be a change of pasture?

A. Yes; we have that to a certain extent.

Q. That the fowls should be removed to some land that is not poisoned?

A. Yes, that is strictly correct, but a certain portion of our two acres has been ploughed up and to a certain extent we have to curtail our experimental work. You will readily understand the necessity for our doing so.

By Mr. Blain:

Q. If you had four acres instead of two acres would you be better off?

A. Certainly, that would give us twice as much land.

By Mr. Lennox:

Q. If the poisoned land were ploughed up and left for a time wouldn't it become all right in due course?

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A. Yes, if it were sown with grass as a part of it has been, the chickens would be immune from contamination; but in course of time—if succeeding generations of chickens ran over the land—it will once more become contaminated. I think the better way would be to let the ground remain unused for a certain time and resort to new land, and finally come back to the former ground.

Q. Exactly?

A. But of course if we had turkeys, geese and ducks we would have to have a very much more extended field of operation, because it would never do to have the different breeds of poultry brought up together. You can imagine, in such a case, the mischievous results that would follow the breaking out of blackhead in the turkeys.

By Mr. Henderson:

Q. The turkey is naturally a wanderer and requires a great deal of ground?

A. Yes. It is a forager. It is difficult to keep turkeys within small limits. Geese are also foragers.

By Mr. Lennox:

Q. But they do not require so wide a range?

A. No, not quite.

By Mr. Blain:

Q. But it is possible to raise turkeys and geese in small numbers?

A. Yes, but in limited numbers where there is limited range.

RECOMMENDED REMEDIES.

By the Chairman:

Q. In brief, Mr. Gilbert, in order to prevent blackhead would you advise some form of treatment?

A. Yes; I have a form of treatment in my notes. I thought it best to first mention what might be found preventive measures. With your permission I will mention some of the recommended remedies. There is nothing surely guaranteed. I cannot state anything for a certainty, nor can I find any authority who can. Nevertheless it is my duty, and I am sure your pleasure, that I should lay before the farmers of the country such information as I have collected from the best authorities on the disease and which is calculated to help them.

As before remarked, advanced cases of blackhead are considered incurable, and it is only waste of time and effort to attempt to cure a badly affected bird. In mildly affected cases Mr. John Baynes, of the Agricultural College, Truro, N.S., writes that he has used in Africa and Australia the following remedies with marked success:—

1. Sulphur, 5 grains; sulphate of iron, 1 grain, and sulphate of quinine, 3 grains.
2. Sulphate of iron, $\frac{1}{2}$ grain; salicylate of soda, 3 grains.
3. Beurso-naphthol, 1 grain; salicylate of soda, 1 grain.

In each case a dose should be administered at night, or, in acute cases, night and morning. As I have said, these are not given as certain cures, but they may help to combat the disease in mild cases. I have already mentioned that Dr. Higgins has used a teaspoonful of muriatic acid to a pint of drink water, with good results so far. Now, if the use of this acid is found to be a check to the development of such a grave disease, surely great good will have been accomplished.

By Mr. Blain:

Q. Is the acid tried as a preventive?

A. I answer in the words of Dr. Higgins: 'The acid is used with the object of carrying the affected birds over the acute attack and later to find a preventive.' No remedy has yet been found that can be stated as a sure cure.

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By Mr. Henderson:

Q. Do you administer that treatment to a bird that has not been affected?

A. It could be used to good effect in that way. I speak more directly in mildly affected cases.

By Mr. Thornton:

Q. You say that a badly infected case is incurable?

A. Yes.

Q. Would it not be advisable to adopt preventive measures all over the country in order to try and prevent the spread of the disease?

A. Certainly, that is one of my objects in appearing before you this morning and giving you this short resumé. I would like all the information we have to reach the farmers in the shape of my evidence which I am now giving before your committee.

Q. Is it the intention to administer this remedy to perfectly healthy flocks of birds so as to prevent their contracting this disease?

A. Such could certainly be done, but, as I have already noted, other preventative measures are cleanliness, the avoidance of inbreeding, thorough disinfection, &c. The disease has never been scientifically investigated in Canada, and the information I am giving to the committee this morning is what I have gleaned from the best authorities extant and the result of Dr. Higgins' efforts carried on until very recently in an informal sort of way. I do sincerely hope that scientific authorities in Canada will take the matter up in a more extended way; meanwhile we should be guided by what the most reliable investigators have so far found as likely to be preventives and many of which I have mentioned. A drawback is that when first symptoms have shown themselves they are not noticed, and frequently when noticed it is too late to adopt remedial measures. Furthermore, little is known by the farmers of the country as to the deadly nature of the disease. Farmers frequently write to the effect: 'My turkeys have the cholera. What is the trouble with them?' Now, the farmers have to learn the first symptoms of the disease, and then to realize that is the proper time to adopt remedial measures. I am afraid it is a hard matter to get the farmers to attempt treatment when first symptoms are noticed because it necessitates some little trouble.

By Mr. Lennox:

Q. You told us that in a severe case no cure is possible; nothing can be done?

A. No, not in advanced cases.

Q. What about a mild case?

A. Then there is some hope.

Q. There are some remedies which will check the disease? But you say that even in a mild case the remedies will not cure, but only check it?

A. So far no certain cure has been found, but if we can check the disease it will be a great achievement.

Q. Have I not stated the position of matter correctly?

A. Yes, certainly.

Q. That is that in a mild case you simply check the disease; you do not eliminate it?—A. Just so. Really, even that has never been proven.

Q. That is what I would like to know?

A. And I would very much like to be able to answer you positively. As I have said, there are five turkeys now in the hands of Dr. Higgins, which, when brought to his laboratory, were apparently affected with the disease. He is going to kill one in order to discover whether the treatment has had any effect in the case of that bird or whether a turkey is affected with the disease or not.

Q. Is it known that those birds actually had the disease when he began to treat them?

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A. Dr. Higgins informed me that they did seem sick when he got them. We have no test, such as the tuberculine test as applied to cattle, for finding out as yet whether a turkey is affected with the disease or not.

Q. It seems to me that there is not much object in checking the disease; the most effectual way is to destroy the birds and endeavour to get rid of them?

A. That is what the best authorities say. They recommend that the whole flock should be destroyed and new blood brought in. But investigations, in the way that Dr. Higgins and other investigators are carrying on, with the hope of finding a cure, are surely invaluable.

By Mr. Lennox:

Q. There is another point. Has there been any action taken by the government to inspect turkeys that are for sale in the market? Has there been anything of that kind?

A. I do not think there is any such inspection, but the city has a food inspector in the person of Dr. Hollingsworth who has seized turkeys on several occasions on the market which from their appearance he concluded were not fit to eat. And investigation proved some had blackhead.

Q. Here in Ottawa?

A. Yes.

Q. Is this blackhead a visible disease? Does it manifest itself on a turkey? Has the bird actually a blackhead?

A. Discoloration of the head is one of the symptoms, but it is not always present. The worst feature of the disease is that when emaciation is visible it is too late to save the bird. There are certain symptoms, such as I have described, which to the careful observer should be evident. If a man has a flock of birds which he values he is likely to look to their condition every now and again.

By Mr. Thornton:

Q. I suppose it is an established fact that it is contagious?

A. Yes, from the fact that contamination may be taken up in the food or drink. Unless affected ground is thoroughly ploughed up and thoroughly disinfected it is a source of danger.

By Mr. Blain:

Q. If two lots of turkeys are placed in a store for sale, one affected with blackhead and the other not, could the ordinary purchaser detect either?

A. It would be difficult unless the disease had so far advanced that the emaciated condition of the bird is evident. It is one of these subtle diseases which is hard to detect when a bird is first affected.

By Mr. Chisholm (Antigonish):

Q. Would not any disease be evidenced by emaciation?

A. Yes, but in this disease there is usually diarrhoea from the bird.

By the Chairman:

Q. Is there anything to indicate that when a man goes into the market he could say, this bird has that particular disease?

A. I think not, unless symptoms had clearly shown themselves.

By Mr. Blain:

Q. Did I understand you to say you had five birds at the Experimental Farm and were feeding them?

A. Dr. Higgins has procured them for experimental purposes.

Q. At the Experimental Farm?

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A. Yes, at his laboratory of the Health of Animals Department on the Experimental Farm.

Q. Are those the first birds purchased for that purpose?

A. Yes.

Q. How long is it since they were purchased?

A. Three or four months.

Q. Are we to understand that this disease has been widespread in the community and that the first effort to experiment at the Experimental Farm has been within the last three months?

A. The first official experiment. I think I might mention that in 1899 I published a report on blackhead and in that report is noted the first case of blackhead detected in Canada.

Q. How long is that ago?

A. In 1899.

By Mr. Hunt:

Q. Is there any particular breed of turkeys more than another affected by this disease?

A. No, all are affected by it. Young birds are chiefly susceptible.

By Mr. Best:

Q. You simply get these affected birds from the farmers, do you?

A. Yes.

Q. The reason I ask is if we had this disease ten or eleven years ago and it has caused the death of a great many turkeys, has there been no experiment made to try and check this disease in some way?

A. In the United States they found no remedy, and so far as we are concerned in this country it is a comparatively new disease. But no efforts have been made to deal with it until lately.

By Mr. Hunt:

Q. Have you any disease of that kind on the farm?

A. No, we do not keep turkeys, but the letters I have read show how widespread this disease is, and we are every day getting letters in relation to it.

By Mr. Henderson:

Q. You tell us one of the chief causes of the trouble was inbreeding?

A. One of them, yes.

Q. Now, it appears to me if you are ever going to eradicate the disease you must start at the bottom. You must get healthy eggs to breed turkeys from. Now, cannot the Experimental Farm do something in the way of getting healthy birds and distributing healthy eggs all over the country? I think something of that kind should be recommended. I do not think it is sufficient to try curing a turkey after it is diseased. It is not worth the doctor's bill. I would rather start afresh and get at something that would practically prevent the disease. As to inbreeding, do you lay as much stress on that as we understand you to do?

A. Yes, inbreeding in turkey raising is certainly followed by disastrous results. The point you brought out as to eggs is an important one. All eggs that are purchased for hatching purposes should be disinfected; should be washed over with a mild solution of some disinfectant as a precautionary measure. I may say that I have only taken up such points, an explanation of which will be of the most service to the farmers. What we want to get the farmers to do is to pay more attention to the condition of their turkeys from time to time. When they notice a bird to be sick they should isolate it, and then at this early stage some of the measures I have named to the committee might be effective.

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By Mr. Lennox:

Q. And while we do not know that there is any selling of infected birds to the public; so far as you have said or could ascertain those birds might never be fit for human food?

A. Unfortunately that is likely to be the case until more is known about the disease and its first symptoms. If I am allowed I would suggest to the chairman and gentlemen of the committee that Dr. Higgins be summoned and he will doubtless be able to give you much information from his standpoint of bacteriologist. My only intention on this occasion is to arouse the attention of the farmers of the country to the serious ravages this disease is making among their turkeys and to ask their co-operation in our attempt to stem it.

By Mr. Best:

Q. It is to be regretted that you have no turkeys in your department at the farm to experiment with. Such information as you are giving now, while very useful and which will doubtless be of service to the farmers of the country, would be much more effective if based on your own practical experience.

A. I appreciate that point. I doubt whether a bacteriologist could have given you more information about the disease than I have done. I have only quoted what our own Dr. Higgins and other leading bacteriologists in the United States have found as to the nature of the disease and certain preventive means and remedies recommended by them. I want to arouse the farmers as to what loss this disease is causing means to them.

By Mr. Blain:

Q. Turkey raising is a very profitable business?

A. Yes. I have already mentioned to show this the statement of Mrs. Harvey True, who sold fifteen turkeys for \$50. Owing to my having received so many letters on the subject and the question having been brought up in parliament, it was suggested to me that it would be as well to bring the matter before this committee. I have done so, and have enumerated preventive methods and explained what Dr. Higgins has found to be a means of prevention. Now, if his discovery turns out to be a really preventive measure, it will be of considerable value. You must remember that the United States Bureau of Agriculture and the State of Rhode Island have had investigators inquiring into this disease for the past nine or ten years, and that they have so far reached no positive treatment that will cure except, perhaps, as to the best preventive measures among them—cleanliness—and what Mr. Henderson has so timely mentioned—the refraining from in-breeding.

By Mr. Lennox:

Q. Your department, Mr. Gilbert, is called the poultry department?

A. The poultry division at the Central Experimental Farm.

Q. Are you the head of that?

A. Yes.

Q. Are we right in understanding that the only poultry you have under your care and management are hens?

A. Yes, hens.

Q. If we were rounding out your poultry division and making it up to date we should place under your management hens and turkeys, geese and ducks?

A. Yes.

Q. And in order to have a complete and properly rounded out poultry division it would be necessary to have a great deal more land, would it not?

A. Yes.

Q. Probably a hundred acres in all?

A. I would not say so much as that.

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Q. What area would you say?

A. I think 20 or 25 acres.

Q. That would be sufficient for all experimental purposes and permit the incorporation of all branches of poultry?

A. Yes, to have it thoroughly representative. We have some land peculiarly adapted for poultry raising.

Q. What I have suggested would be advisable, would it not?

A. I certainly have no objections to such arrangements.

By Mr. Blain:

Q. Are we to understand that you have no geese or ducks at the Central Farm?

A. We have only hens.

By Mr. Best:

Q. Did you ever have geese or ducks or turkeys?

A. No.

The CHAIRMAN.—I am sure we all appreciate very much the valuable information imparted to the committee by Mr. Gilbert.

The committee adjourned.

Certified correct.

A. G. GILBERT.

THE PRODUCTION OF EGGS IN WINTER

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, February 22, 1911.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock, a.m., Mr. Schell, the Chairman, presiding.

The CHAIRMAN.—As you know Mr. Gilbert appeared before us a short time ago and only a portion of the subjects announced were dealt with. We therefore thought it wise to have him return and continue his remarks on the topics of which notice has been given; viz.—“The Increasing Demand for Strictly New Laid Eggs;” “The Farmer’s Great Opportunity to Supply the Same” and “The Best Methods for him to Adopt in Procuring Eggs in Winter.” We are all pleased to have Mr. Gilbert with us again, to address us on this subject.

Mr. A. G. GILBERT.—I have great pleasure in appearing before you again in response to your summons, and I will ask your kind attention for a short period, while I address you on the subjects which the Chairman has announced.

THE INCREASING DEMAND FOR STRICTLY NEW LAID EGGS.

My first point is the increasing demand for strictly new laid eggs.

There is a rapidly growing demand for strictly new-laid eggs with the delicious flavour which they ought to and will have if laid by well, cleanly, and properly fed hens, and placed in the hands of the consumer as soon after they are laid as possible, and the sooner the better. A new laid egg is not only toothsome, but it is highly nourishing. Indeed, in cases of incipient consumption new laid eggs are prescribed as a specific. The new laid egg then should be (a) Well-flavoured, (b) Extremely nourishing, (c) Placed in the hands of the consumer soon after being laid, (d) Be clean and inviting in appearance.

Good flavour depends upon the feeding of pure, wholesome and varied rations—such as I will describe later on—and the eggs should be laid in absolutely clean nests. The hen that is allowed to eat decaying animal and vegetable substances or drink leachings from a manure heap—as many are allowed to do—is not likely to lay an egg with as fine a flavour as one that is fed with care and cleanliness. Nor will an egg fed on filthy substances keep as well. Corn or corn-meal, as part of a ration, tends to good flavour and better keeping, and what is of great import, the egg should be non-fertilized, especially so in the summer season.

By Mr. Wilson (Lennox and Addington).

Q. Will the hens lay as well if they get that kind of treatment?

A. Yes, we found out some time ago by experiment that hens will lay equally as well without the male bird. To have a nutritious egg the hen which laid it must not only be well nourished by proper and generous feeding, but she must be kept absolutely free from lice. It will be plainly evident that if lice are permitted to suck the life-blood of a hen, that she will not lay an egg as full of nourishment as she would do if in robust condition. I repeat; that if lice are permitted to get first

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chance at the blood (the nutriment) of the hen, that there will be precious little nourishment in the eggs laid by her. This is a most important point and one on which very little importance is placed I am afraid, by farmers, for I get many letters to this effect,—‘My hens were laying fairly well; after a while they began to lay fewer eggs; became thin and weak looking, with pale combs, and some go staggering about. Can you tell me what ails them?’ And I certainly have no hesitation in stating that lice is the trouble, and I advise them to use fresh lice destroying powder—such as pyrethrum—upon the hens, and to spray the poultry-house with an eight or ten per cent solution of carbolic acid, mixed in hot water, so as to permit of the acid readily assimilating with the water, or one of the well known sheep dips, and to be sure that, afterwards, the hens as well as the house are free from lice. Nothing is more effectual in the keeping of the poultry-house and the fowls free from lice than fine and dry coal or wood-ashes. Give the fowls dust baths of the ashes and scatter some about the poultry-house. A great deal of dust may result but the lice cannot live in dust.

By the Chairman:

Q. That is so simple, you would give us to understand it is really very effective?

A. It is. I have had many letters from farmers stating that they have found it so.

By Mr. Wilson (Lennox and Addington):

Q. Would you state that over again?

A. Nothing is more effectual in keeping the poultry-house and the fowls free from lice than fine and dry coal or wood ashes. Give the fowls dust baths of the ashes and scatter some about the poultry-house. A great deal of dust may result, but lice cannot live in dust. Lice have no nostrils. They breathe through the pores of the skin, and the fine dust by adhering to the skin chokes the lice. Hence, the reason why the hen, when at large, takes to the fine road dust in preference to any other kind.

The CHAIRMAN.—The subject you are dealing with is so important that I was anxious to have it emphasized in the report. I believe lice are the greatest detriment that the poultry-men have to contend against in the production of eggs, and if such a simple remedy will dispose of the lice everybody who has poultry ought to know it.

By Mr. Sproule:

Q. Do you mean dust as well as ashes?

A. Either.

Q. I am very much afraid it is not an infallible remedy?

A. I have tried it with the most marked success. It simply means that if the fine dust gets at a louse he is done for.

The CHAIRMAN.—In the summer months hens will invariably go to dry earth and dust themselves, and it seems to me that what the witness is saying only confirms what we have seen in our every-day observation, that hens will go and dust themselves in fine earth or anything of that nature; and I presume the object is to keep themselves free from vermin.

Mr. SPROULE.—We have kept hens for twenty-five years, and every year we put quantities of ashes around the hen-houses, and yet we find lots of lice on the hens. It does not seem to me to be an infallible remedy.

Mr. GILBERT.—I know that in some cases, especially where red mites have got possession of the hen-house, it is very difficult to get rid of them; so difficult that if a man writes me to say that his poultry-house is infested with red mites, I write and tell him, ‘You have got the work of your lifetime cut out.’ It is a hard matter to get rid of red mites, for they hide away during the day and come out in the night time,

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in countless thousands, and suck the blood from the hens. They also multiply very quickly. It is said that red mites have great grandchildren in forty-eight hours. Now this, as the Chairman has said, is a most important point, because many farmers write to me complaining that their hen-houses are infested with what are, doubtless, red mites. In the case of red mites, it is best to begin by spraying the poultry-house carefully with a solution of from eight to ten per cent of carbolic acid, mixed as I have explained. Do this while the hens are out of the house early in the morning, so that the dangerous effects of the solution may be nullified by night when the hens go to roost, afterwards apply the dust or whitewash, and I think there will be very little future difficulty. And I think if the poultry-house was whitewashed occasionally it would be an advantage anyway.

Mr. BEST.—My experience has been something like Dr. Sproule's, but by adding some finely ground sulphur to the dust we found that it destroyed the lice altogether.

Mr. GILBERT.—Yes, there is not the slightest doubt that the sulphur would help. The trouble is that most persons, who keep poultry, will not adopt a remedy until their poultry houses are in complete possession of lice. Once a house is thoroughly infested, it is a very hard matter to get rid of these pests, particularly the red mites. But it can be done with energy and perseverance.

With your permission I now take up my next point, viz.:—The increasing demand for strictly new laid eggs. This rapidly increasing demand is one of the most striking instances of poultry development in recent years. The call is both urgent and rapidly increasing.

I speak now more particularly of the home market, and I will read the following official figures to verify my statement that the demand of the home market has rapidly increased in recent years. In 1902 we exported 11,635,108 dozen eggs to the value of \$1,733,242. In 1909, seven years later, the shipments had decreased from 11 millions to 552,850 dozens, of the value of \$124,315. In 1910 we exported only 160,650 dozens, having a value of \$41,766.

By Mr. Wilson (Lennox and Addington):

Q. To what country were those eggs exported?

A. To Great Britain principally.

Q. And the exportation is continually falling off every year?

A. Yes, as I have just shown.

Q. Is that largely because of the increased consumption at home?

A. Yes, showing the increased value of the home market.

Q. And we have not got the eggs to ship abroad; is that the meaning of it?

A. So far from having eggs to ship we have actually been importing them.

Q. So I have heard.

A. And some of these exports have not been very successful.

By Mr. Arthurs:

Q. Do we produce more or less eggs than formerly?

A. We undoubtedly produce more. Perhaps you will permit me to explain, as I do at Farmer's Institute meetings, that the position of the egg and poultry situation in Canada is actually unique and in this way: that we have reduced exports; increased home production and, notwithstanding, increased prices.

By Mr. Wilson (Lennox and Addington):

Q. And you are increasing also your import of eggs?

A. Yes.

Q. Year by year?

A. Yes, more so in the past two years. That is one of the most striking features of the situation. If you were to go to a business man and say to him:—'We have not only decreased exports but increased production,' I think he would be likely to

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say 'You must have a mighty cheap home market.' But instead of that the value of the home market has steadily increased, so that prices, for strictly new laid eggs and the better quality of poultry were never higher than they have been this winter. All this goes to show the rapidly increasing value of the home market.

By Mr. Sealey:

Q. You have laid considerable stress on the desirability of new laid eggs and eggs produced under circumstances favourable for improving the quality. Now, does it come within your province to compare the qualities of eggs?

A. We sometimes do that. I have some eggs from one poultry department with me to show their superior quality and how neatly put up.

Q. Have you compared any of the imported Russian and Chinese eggs with the eggs produced in Canada under good conditions; and if so, can you state the comparative results?

A. No; I have made no such comparison.

Q. Would it not be a good thing to do?

A. It would. I may be permitted to say that a merchant friend had some experience in this respect.

Q. And what was the result of that experience or comparison?

A. I may say that it was rather an unfortunate one, for the Health Officer of Montreal condemned the whole importation he had made as unfit for human food. I am speaking now more particularly of the eggs imported from Russia and China.

Q. Do you know what became of those condemned eggs? Were they sent out of the country or were they allowed to circulate through Canada and go into consumption?

A. I do not know anything beyond what I have read in the newspapers and the information which I have received from my friend. I have some strictly new laid eggs with me from one poultry division of the farm, and I will point out their points of superiority in a few minutes.

By Mr. Blain:

Q. Were the eggs that you refer to imported in the shell?

A. Some were, and others were broken and in cans.

Q. Chiefly broken, I think, were they not?

A. Yes, the greater quantity were I believe. I would like to have seen some of these Chinese eggs, for they were said to be quite aged and venerable.

By Mr. Sealey:

Q. I do not know whether it is your duty, but it certainly should be some person's duty, to compare the quality of these imported eggs with that of our native eggs, so that our people may not be imposed upon in the importation of eggs of inferior quality, even if sold at a lower price?

A. I quite appreciate your point. It is not exactly within my jurisdiction. I think officials at Montreal and other ports of entry do that, and I sometimes hear results.

Q. I understand that those eggs, although condemned, are percolating into general use, and I do not think they should. As you are the man at the head of the poultry and egg department of the country, I was under the impression that it was your duty to look after that matter?

A. Doubtless it would be most important and interesting work, but permit me to say that I have just about as much work at present as one man can do if I confine myself strictly to my present duties, viz., to attend farmers' meetings, write bulletins and reports, besides attending to a large and rapidly increasing correspondence and the experimental work.

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By Mr. Blain:

Q. Have you any figures to show the total production of eggs in Canada?

A. Not official figures. But the figures I have just read to you are official. I believe the value of the poultry industry last year in Canada amounted to something like \$48,000,000. This statement was made by Mr. J. A. Gunn, President of the Montreal Produce Exchange, in a recent address by him.

Q. You mean that the investment in the poultry industry in Canada last year amounted to \$48,000,000?

A. I mean that the output of both eggs and poultry in Canada last year was valued at that large amount. As to the United States, it was nearly \$700,000,000.

By Mr. Thornton:

Q. I presume the only way to get at the value of the eggs produced in the country is just to estimate. There is no way of getting anything like exact figures?

A. No not yet, neither in Canada nor in the United States. Some of these estimates are carefully prepared. I believe that in our forthcoming census statistics will be collected as to poultry. If you remember the schedules in the last census only included horses, cattle and pigs. In the forthcoming census I believe poultry will be included. Upon a future occasion—when I hope to have the pleasure of again appearing before your Committee—I may be able to give you something more definite than I can just now do in this regard.

By Mr. Wilson (Lennox and Addington):

Q. That will be, I suppose, the year following the Census?

A. I hope so.

In proceeding, I beg to state that the urgent and increased demands in the larger cities of Canada for eggs and poultry of superior quality has resulted in high figures being asked and cheerfully paid for the choice and select article. I do not like quoting these prices for—while they are strictly correct—they are to a certain extent exceptional inasmuch as they are paid for an exceptionally choice article, but one that is being more asked for every year, and not only in the winter, but also in the summer season. It should certainly be the aim of the farmer to cater to this high class trade and secure the higher values.

I wish now to show you that some farmers or their wives do cater to this high class trade. I have here a letter from a farmer's wife whose name I need not mention, but if it is necessary I will do so. She writes about a disease that attacked her fowls and in so doing states that they had got up to an average of $2\frac{1}{2}$ dozen eggs a day, until the ailment complained of, reduced the egg yield to one-half to what it was. This she says was quite a blow to her pocket and her pride for 'I got fifty cents a dozen from a Montreal house for my eggs during December and January, but now, as usual, prices are coming down.'

By Mr. Best:

Q. Does she say how many hens she had that produced that number?

A. No. She does not so state in her letter.

Here is a letter from a lady of Cranbrook, British Columbia—written a few days ago—who says: 'Eggs have been 75 cents here all winter (per dozen I mean) except at Christmas, when they were 90 cents per dozen.'

I have also a letter from a gentleman living on Second avenue, Vancouver, B.C., who states: 'Eggs at 50 cents, and 80 in winter cause one to have a high regard for the hen which lays the eggs when prices are at the figures named.'

I could further quote but it is hardly necessary. These are however very respectable prices.

Now, if you will permit me, I will hand to you some card boxes of eggs. The eggs were laid by the hens in our poultry division. Each case holds one dozen eggs.

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This (passing around box) contains eggs from White Rock pullets, and you will notice that they are remarkably large and fine. This is a case (producing case) of hens' eggs. I want you to note the difference between the hens eggs and the pullets eggs. In this instance the difference is not so great, as it usually is, for the pullets eggs are on the large side, but there is a noticeable difference. These are cases containing eggs from White Wyandotte and White Leghorns. There are some very fine Buff Orpington eggs.

Such prices as fifty cents per dozen were paid by the leading groceries most willingly for such eggs as shown. These grocers have a good class of customers, and sixty cents and even a higher figure per dozen were charged for the same kind of eggs in this city, up to two weeks ago. This is the time of year when prices usually decline and lower values are likely to prevail. One of the partners in a leading grocery firm in this city assured me that he received sixty and sixty-five cents for a dozen of eggs, neatly put up in clean and neat card boxes, such as shown, and the date when they were laid stamped on each egg.

By Mr. Smith (Middlesex):

Q. Can you give us any idea of the cost of production of those eggs that sell at 50 cents a dozen.

A. Will you permit me to speak roughly?

Q. Yes.

A. Then I will say from 12 to 15 cents a dozen.

Q. It would perhaps be better to say 15 cents, because we feed well, particularly during the winter season.

By Mr. Sealey:

Q. In making the calculation of 15 cents, on what proportion of hens laying do you figure?

A. If we get 50 per cent of our hens to lay during the winter season, we consider that we are doing remarkably well.

By Mr. Douglas:

Q. In giving us the figure of 15 cents, are you reckoning that as the price all the year round?

A. No; I refer to part of November and the whole of December, January and February. I desire the farmers to produce eggs in winter and to receive a higher price for them than they do at present. There is too much inclination on the part of the farmer to neglect his hens during the season of high prices, and as a result they do not lay. They do not do so until the weather becomes warm in spring, and then prices go down. Farmers should also put up their eggs in such boxes as these (exhibiting samples). There is on each box, as you see, a special label bearing the printed words 'Strictly new laid eggs' or 'These eggs are absolutely fresh,' so that they are actually guaranteed. And then when a grocer gets these neat packages he puts them on his counter and they are readily purchased. I know of a farmer near Almonte who sent his eggs, put up in such a way, to a grocery in this city. The manager told me that their customers got so satisfied with this brand that they would have none other, but asked, 'Have you got any of the Hillside brand?' You see the value of a good name begotten by putting up a good article in a neat package. The clerk told me that they could not get enough of these packages to sell.

By Mr. McColl:

Q. What do those boxes cost?

A. We get them at a cent a box.

By Mr. Sealey:

Q. With the inside sections in?

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A. Yes, all complete. We pay \$10 for a thousand boxes and \$1 extra for the printing on them.

By Mr. Best:

Q. Is the average cost for production for the summer six months not much less than the other months?

A. Oh, certainly. I am only speaking of the high-priced season. I hope I have not misled the committee in that respect.

Q. What would you calculate to be the cost of production per dozen during the six or seven months of the summer season?

A. That would depend on whether the hens ran outside and picked up a certain amount of their living or were yarded and fed on special rations. But under ordinary farm conditions I think eggs can be produced in summer for, say, from six to eight cents a dozen, perhaps less.

By Mr. Smith (Middlesex):

Q. The cost of production in those other months would be considerably more than six or eight cents?

A. In the winter months?

Q. Yes?

A. I am putting a pretty high value on the cost of winter egg production, because to supply a select article we usually have to go to more trouble and cost. I have emphasized that in my next point, which I will take up a little later on. To return to the card boxes. I saw a very neat box holding a dozen new laid eggs the other day in a grocery store. On the outside of the card box was printed a guarantee that the eggs were strictly new laid and were laid by well and cleanly fed hens. I was in this store on Saturday, January 21st last, and on opening the box I found the eggs stamped the 20th (the day before) when they were laid. With the date was stamped the name of the poultry-keeper. Is it any wonder that such eggs sold at the highest value? In the same store were cases of eggs that were called 'fresh,' but they only were valued at 30 and 35 cents per dozen. Why? Because the man who sold them could not guarantee that they were new laid. It just amounts to this, that the man with the superior article is in a position to demand the highest price, while a man with the inferior article has to take what he can get.

By Mr. Henderson:

Q. What do you call a new-laid egg?

A. One which reaches the consumer within four days after being laid. A guileless purchaser is often imposed upon, but usually for once only. for this guileless purchaser who has paid 35 cents a dozen for the so-called fresh eggs, on finding out afterwards that half are partially hatched, quickly realizes that the eggs have really cost him 70 cents per dozen, and that it would have been cheaper for him to have paid 50 or even 60 cents for a dozen of guaranteed eggs, in the first place. That is a point I like to emphasize when I go to Farmers' Institute meetings.

THE FARMERS' GREAT OPPORTUNITY TO SUPPLY THE STRICTLY NEW-LAID EGGS.

In taking up this point we must bear in mind that it is from the farmers of the country that the great bulk of our egg and poultry supply must come, and that supply is not so likely to come from the few farmers with a great many hens, as it is from the many farmers with a few hens each, say from 50, 75 or 100 each. And it is a matter of congratulation to realize that farmers are in the best position, particularly those whose farms are near to large cities and towns, to supply strictly new-laid eggs, and the superior quality of poultry and so reap the highest prices. Why? Because they are not only within easy reach of a good market but they usually have

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grain, roots, and other essentials in abundance, frequently in the shape of waste. At any rate at first cost. The farmer is indeed in a position to out-rival all competitors. I once attended a large gathering of farmers in Fredericton, N.B. It was called the Farmer and Dairymen's Association, or the Farmers' Parliament. At this meeting a farmer spoke as follows:—"Do you farmers who live near to cities realize your exceptional opportunities to receive the highest prices for your choice products? I speak more particularly of eggs and poultry, for as you know, I am most interested in them. I receive the highest prices because I take the trouble to find out the class of eggs and poultry that brings the best values in the cities, and I try to produce the highest quality of goods which bring the highest prices. Now, why do not more of you do the same?" I need hardly add anything to these remarks. A farmer talking to farmers. A little effort to put up the eggs while strictly new laid, in a neat package, with the name of the party who sells them, and date when laid stamped on the eggs, as a guarantee of their quality. As I have said, the producer of the best is then in a position to demand the best prices. It is the same with his poultry. If his birds are well fleshed, cleanly picked and neatly dressed, he will certainly get a better value for them than if they were skinny, scrawny, and bristling with pin feathers. It is ever to be remembered that the demand now-a-days is for the best in all articles of farm produce. And as you, gentlemen, doubtless fully realize, the best cannot be produced without some extra effort, and extra effort usually means an extra price. But there are some practices on the part of certain farmers which mitigate against their obtaining the best prices, and in their own interests I mention some of them, as follows:—

Holding eggs after they are laid until enough is saved up to make it worth while taking them to market, the eggs meanwhile become stale. Let me relate an instance as illustrating this point. A farmer during a recent winter came into a large grocery store in this city. I was standing by. He had driven twenty-five miles and had twenty dozens of eggs as part of his load. As he entered the busy store he was referred to the Manager, when the following conversation occurred:—

FARMER.—Do you want any eggs?

MANAGER.—How many have you?

FARMER.—Twenty dozens.

MANAGER.—How many months old are they?

FARMER.—(Indignantly) They are not months old. They are fresh.

MANAGER.—How many hens have you?

The answer was given, and a price per dozen of fifteen cents below what was then being paid for new-laid eggs was offered and accepted. The Clerk-Manager evidently reasoned that as the farmer had not a large number of hens that the eggs first saved were stale and a price was offered accordingly. The foregoing conveys its own moral.

Let me add that when the man went outside I followed him and asked, 'What made you sell your eggs for 25 cents per dozen, when newly laid eggs are being sold at twice that value.' He said, 'I got the money any way.' I remarked 'That is not good business. I belong to the Experimental Farm and it is my duty to help you farmers. I will guarantee you a purchaser at 45 or 50 cents a dozen for your eggs if you will promise to send them in twice a week. Will you do it?' He said, 'Yes.' I said, 'I will write you in a day or two and tell you who to bring the eggs to. I will get you the price.' I found him a purchaser at 45 cents per dozen upon the condition that the farmer would send in his eggs, as he had promised, twice per week. I do not know whether that farmer did his part, but I know that I did mine. I also wrote and told him who to take or send the eggs to.

I say to farmers 'If you produce eggs of the right quality put them up neatly, marked, or, sell them while strictly fresh and you will surely get the highest price. And that is the position of affairs to-day.

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By Mr. Russell:

Q. How long would you consider that sterile eggs would remain fresh?

A. A sterile egg if well kept will retain its flavour for a week or even ten days. There is a great difference in their keeping quality as compared with the fertilized egg, especially in the summer season.

Another drawback is, that if the eggs are fertilized and when taken from the nest are placed in a warm cupboard or keeping place, germ development begins and if the eggs are held for any length of time, the germ meanwhile has made certain progress in the hatching process. An eminent embryologist writes 'Where there is a germ in the egg; as soon as conditions are favourable, or partly favourable, the natural process of hatching begins.' It is well to remember this, for a natural law does not cease its operation to suit the convenience of any one. So beyond doubt, if the eggs are kept in a warm place, germ development takes place, and when the eggs reach the buyer in the country store, or city, and eventually the consumer, they are more or less hatched, according to the length of time they have been held. I have not time to enter more minutely, as I would very much like to, into this phase of the question, which is a most important one. The remedy for this state of affairs is to have germless eggs: If intended for the highest class trade, market the eggs at least twice per week, and be sure that the hens which laid them have been well and cleanly fed, and free from vermin.

FORMATION OF EGG CIRCLES.

A comparatively new feature of poultry development—and one doubtless well known to many members of this Committee—is the formation of egg circles for the collecting of strictly new laid eggs and the placing of them in the hands of the consumer as quickly as possible. These egg circles are being formed all over the country, and are proving a great help to the farmers, more particularly those some distance from a market. I have not time to describe the *modus operandi* of these circles. Suffice it to say the eggs are all stamped with the names of the different parties who bring them or send them to a central point in a district, and at this point is an official who disposes of the eggs to wholesale or other buyers. Should a member of the circle send bad eggs he is detected by the stamp and is expelled from the circle or otherwise punished.

In the flourishing town of Peterborough they have had egg circles for some little time in operation, and the collecting of eggs and the sending of them to market is perhaps further advanced there than in any other place in Canada. The circles are now about to purchase a large building in the centre of the town, and co-operative farming associations will send their chickens to be there fattened and then shipped to the city markets. By doing so they will receive the highest price. They are doing very much the same now with their eggs.

As a result of these circles the producers have received better prices and the consumer a better article. In one large hotel in Montreal the consumption of eggs is said to have doubled as a result of their getting reliable eggs from one of these circles.

By Mr. Proulx:

Q. Are you referring to the Place Viger?

A. I mean more particularly the Windsor, but it is doubtless the same in the Place Viger. Mr. Hare, an officer of the Ontario Agricultural Department, is my authority for this statement.

BEST METHODS TO ADOPT IN PROCURING EGGS IN WINTER.

My last point is how to get the eggs in winter. This point is of great importance. It will be well for the farmer to realize sooner—rather than later—that in the artificial treatment of his fowls during the winter season he must imitate, as nearly as

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possible, natural conditions. The hen when running abroad during the summer season supplies herself with material to make the yolk and white of the egg; lime to make shell; grit to grind up her food in her gizzard and to keep herself in robust health. In picking up this variety of diet she has had to make some effort, which means exercise. She keeps her body almost free from lice by vigorously dusting in dry and fine earth, preferably road dust. She exhibits a decided preference for roosting in the branches of trees, where she can have plenty of fresh air, rather than going into a stuffy poultry-house, and we should learn our lesson from the foregoing as to the proper feeding, treatment and housing of our birds. It is evident that the nearer we come to the natural in the treatment of our fowls the greater will be our success. The following information is given as embracing the desirable features mentioned. At this point allow me to remark that it is of the utmost importance that such information as I am relating to you should be sent or given to the farmers. In many cases it is absolutely required before right methods can be adopted. In proof of my statement, let me relate an incident. Not long ago a farmer came into my office and asked: 'What is the matter with my hens?' I inquired: 'What is the trouble?' He said: 'They are lying down on their sides and their legs stick out. They are sick and feverish.' I asked: 'What have you been feeding them on?' He said: 'Oh, peas and oats.' 'How long have you been feeding them peas and oats?' It was then coming on towards the end of January. 'Oh,' said he, 'since they went into winter quarters.' 'And have you never changed their diet?' His answer was in the negative. I said: 'Your hens are likely suffering from inflammation of the lower intestines, brought on by non-variety of diet. Feeding of the oats and peas from day to day without change. 'Do you give them lime to make shell or grit to grind up their food? Do you give them pure water to drink; do you clean out your poultry-house from time to time; are you sure that it and your hens are not infested with vermin; do you give your hens green food or vary their rations; do you keep them in exercise and give them plenty of fresh air?' 'Great Scott,' said the farmer, 'have you got to do all that?' I said: 'Yes. Remember that eggs are worth 50 cents a dozen.' 'Yes,' he said, 'and I want to get them to sell at that price.' 'Well,' I said, 'do you expect to get them if you feed your hens peas and oats all the time? Do you not realize that if it was a dead easy thing to get eggs in winter that they would not be so high priced as they are? It is wisely ordered that the thing that is easy to get is usually cheap in value.' We then had an old-fashioned talk together, and I am sure that farmer went away, at any rate, a wiser if not a happier man.

PROPER RATIONS FOR USE DURING WINTER.

First, I mention a ration embracing a mash, and I do so because the mash may afford opportunity to use the table and kitchen waste.

Morning.—Wheat, or at other times buckwheat, in quantities of from 8 to 10 pounds to 100 hens. Scatter in the litter on the floor of poultry house or scratch shed.

Noon.—Steamed lawn clippings or clover hay, three or four times a week. If thought necessary, give 5 pounds of oats to 100 hens. Scatter in litter on floor of the pen or house.

Afternoon.—Mash composed of such ground grains as are in most abundance, with waste of kitchen and table. Mix these with hot water and feed when cool, in quantities of two to three ounces to each hen. The following ground grains have been found to be effective when mixed into mash, with one part of meat meal:—

Shorts.. . . .	2 parts.
Ground oats.. . . .	1 part.
Cornmeal.. . . .	1 part.

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The above ground grains mixed in the proportions specified will be found suitable, should it be desired, to feed by the hopper method also. The usual practice is to intimately mix the ground grains and put them into one compartment of a hopper, usually divided into three parts. The second division of the hopper is frequently filled with ground oyster shells and grit, and the third with beef scrap, which is a coarser form of the meat-meal sometimes used in the wet mash. But there is no form of meal equal to cut green bones.

A whole-grain ration which has been found an egg-producer during the past two winters is composed of: One-third wheat, one-third buckwheat, one-third oats. The grains were fed in conjunction with roots, cut bone and grit, at the rate of 3 to 5 pounds per day to 24 hens.

The following rations, which are at present being used in our poultry division, have been found effective in the winter production of eggs:—

For hopper or dry feeding in unheated houses:—

Hens, 2 parts bran, 1 part ground oats, 10 per cent charcoal.

Pullets, same as foregoing with addition of one part cornmeal.

We make a distinction in the feeding of pullets and hens. Feed that will agree well with a pullet is apt to make hens between 18 months and 2 years old too fat.

By Mr. Sproule:

Q. Do you grind up the charcoal?

A. Yes.

By Mr. Russell:

Q. Have you ever tried rolled oats?

A. Yes, and it was most successful.

By the Chairman:

Q. Have you ever fed any black or cayenne pepper in your mash?

A. No, we do not believe in stimulants of that kind.

By Mr. Russell:

Q. What do you think of mustard?

A. We are just about to try it.

Q. It is something new?

A. Yes. And very much recommended.

By Mr. Sealey:

Q. Would that not be a substitute stimulant for pepper?

A. Perhaps. I will tell you more about it when we have tried it.

Q. You said a moment before that you did not believe in stimulants.

A. No. But very often red pepper is used in too great quantities.

By Mr. Thornton:

Q. It gives the eggs a bad flavour?

A. It results in inflammation of the ovarian duct, and the egg is frequently expelled before the shell is formed. The result of feeding pepper, or highly seasoned condiments, in too great quantity is the laying of eggs with soft shells.

By Mr. Rankin:

Q. What is the particular advantage in using charcoal.

A. It is a good tonic and a corrective of the stomach and bowels. In individuals it is given in cases of heartburn or waterbrash, and has been found particularly effective in the treatment of young chickens.

By Mr. Sealey:

Q. What bad effect do you find from the use of red pepper?

A. It is too stimulating in its effect. I can speak authoritatively on that point.

Now as to the rations I have outlined. They are generous, and all such rations are stimulating enough. Our great aim and object should be to keep the fowls in robust condition. When she is running at large in this country, she does not eat any pepper, but she picks up, as I have already stated, all that goes to make the yolk and white of the egg; a good shell; grit which enables her to grind her food in the gizzard and she also keeps herself in robust condition. We should take our cue from these facts.

By Mr. Thornton:

Q. Are angleworms in large quantities good for hens or not?

A. I have never found angle worms do hens any harm where there is new ground; but on old ground that has been in use for years, it is said, they are the cause of gapes.

By Mr. Russell:

Q. Speaking of rolled oats. Have you fed such oats with the hulls on them?

A. What you call steel cut oats.

Mr. SPROULE.—No, it is not steel cut oats.

By Mr. Russell:

Q. I mean rolled oats with the hulls on them?

A. No, we have never tried them.

Q. You have not tried any mixing in that way?

A. No.

Q. It has been tried, and the hens seem to enjoy it.

A. I have seen it fed in a poultry establishment and the hens do well on it. I think it is fed by the hopper system.

Q. Yes, the fowls can get to the hopper any time.

A. Yes.

To continue in the matter of rations. In all cases grain was scattered in the litter on the floor in small quantity, morning and evening to incite to exercise in scratching for it. The pullets were given cracked corn at one of the daily grain rations. Cut green bone in proportion of 1 lb. to 15 or 16 hens, was given every other day.

Roots, grit, broken oyster shells and drinking water were regularly supplied. These essentials should always be in regular supply.

To recapitulate, I go over the following indispensable points in the winter production of eggs:—

1. The rations should be varied and fed regularly.

2. The poultry-house of the cotton front type has been found cheap in construction, wholesome, dry and tending to excellent egg laying. Plans can be had on application to our poultry department.

3. The farmer should build up by breeding from his best egg-layers a prolific egg-laying strain of fowls, or he should procure his birds from well-known egg-layers to breed from, or eggs from such a strain to hatch out.

4. The poultry-house should be kept scrupulously clean, free from vermin, and the hens should be well and cleanly fed on a varied diet. The nests should be kept equally clean.

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BEST FOOD AND TREATMENT OF YOUNG CHICKENS.

Chickens should be carefully but well fed from time of hatching until they reach the saleable age of $3\frac{1}{2}$, 4 or 5 months. In causing their satisfactory development the following food and management has been tried in our department with much success, namely:—

For the first thirty-six hours after hatching, little or no food should be given. The chicks require careful brooding more than anything else. Much depends upon their vitality. Some may be the better of a little food; if so, a few stale bread crumbs may be given.

Second and third days.—Stale bread soaked in skimmed milk and squeezed dry, or one part of finely-chopped hard-boiled egg and three parts of stale bread crumbs. Feed no more than the chickens will eat up without waste. If the chicks are hearty, feed every two or three hours. Continue this for a day or two, and then add granulated oatmeal. Continue the stale bread soaked in milk and granulated oatmeal for ten days, when finely-crushed corn may be added to the foregoing with advantage. After fourteen days give whole wheat, in small quantities at first.

As the chicks grow older, they should be given a mash composed of stale bread, shorts, oatmeal, ground meat, &c. Finely-cut bone or meat will be found a great incentive to growth at this stage.

On the chickens becoming eight weeks of age, their feeds may be reduced to three times per day. Care should be taken that they are generously fed the last time for the day. For drink give them skimmed milk and water. When the hen-hatched chickens are fully feathered, their mothers should be removed from them. The chickens will be found to return to their coops as usual, where they may be allowed to remain until removed to more commodious quarters in colony houses. On the incubator-hatched chickens becoming too large for the brooders they should be removed to colony houses.

MOULTING OF THE HENS IN SUMMER.

How the hens may be made to moult during the summer months is a question that is frequently asked, particularly at the beginning of the summer season. The following treatment has been successful here for several years. During the early part of July—after the breeding season is over—the fowls were placed on half the usual rations for 15 or 20 days. The effect of this treatment was the stoppage of egg production and the loosening of the old feathers. At the end of 15 or 20 days, the full rations were resumed. A little linseed meal may then be added to the mash with benefit. Before the beginning of operations to bring on the moult, the cock-birds were removed from the breeding pens and placed in compartments by themselves. The hens were then allowed to run in small fields where they could find insects, clover, grass, &c. In the feeding of the fowls during moult, care should be observed that they do not become too fat. The fowls are more apt to become over-fat from too generous feeding during the moult than after they have recommenced laying.

By Mr. Sexsmith:

Q. The market for eggs at 40, 50 and 60 cents a dozen is very limited, is it not?

A. No. I think it the opposite.

Q. If we have as big a production of eggs in January as we have in June, can we get 40 or 50 cents a dozen for them?

A. My experience is that the more eggs we produce the more are eaten and the greater demand there is for them.

By Mr. Russell:

Q. Are you getting 50 cents a dozen at the present time?

A. No, the price is now down to 45 cents and will soon be lower.

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Q. Do you sell the eggs from the farm?

A. We sell them to people who come for them, particularly in case of sickness and to certain customers.

By Mr. Sexsmith:

Q. Why is the price falling?

A. Because of the approach of spring weather.

Q. Stamped eggs are not increasing on the market at this season?

A. Perhaps not, but we have to be careful, for unfortunately there will be a very unreliable class of eggs soon placed on the market—eggs which have been held in cold storage, &c., &c.

By Mr. Smith (Middlesex):

Q. In competition with the good ones?

A. Yes, I am very much afraid.

By Mr. Sexsmith:

Q. In January they were getting 38 cents a dozen for eggs in the country. They were collected twice a week.

A. I paid a man at Burke's Falls myself 45 cents a dozen for strictly new laid eggs. I got them as a favour for friends in this city.

By Mr. McColl:

Q. I understand your contention is this, that if all egg-producers would follow the rule of sending their eggs into the market strictly fresh-laid, the consumption of eggs would increase probably ten-fold and the high price would remain?

A. Undoubtedly, as is proved by our decreasing imports and the increasing value of our home egg market. The high prices are not paid for the third or fourth rate but for the highest class article.

By Mr. Russell:

Q. I know a gentleman who was offered four cents an egg last fall?

A. That is what they get in Guelph O.A.C. poultry Department for eggs in bulk from a Toronto dealer.

Q. The party I refer to was gathering them. Will all stamped eggs bring five cents a dozen more than the market price?

A. Yes, and sometimes even more for a guaranteed and choice article.

By Mr. Sproule:

Q. Don't you think that the high price of meats of late has accounted a good deal for the large increase in the consumption of eggs, and in raising the price?

A. Undoubtedly that is one factor. I have not gone into that phase of the question. The different causes of increased prices is matter for an address in itself.

By Mr. Russell:

Q. Do you really think that is the cause, or do you think that people have found out that eggs are better in quality than formerly?

A. Doubtless that is another cause. I think that they have also found out that there is just as much nutriment in two fresh eggs as in a pound of steak.

By Mr. Thornton:

Q. I think there can be no doubt that the demand for strictly fresh eggs is great. I have frequently gone into a first-class hotel and asked for eggs for a meal and could not get them?

A. I have been in the same position. I have been during winter on a Pullman dining or buffet car and paid the highest price, but the eggs I got were far from

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fresh and certainly abominably flavoured. Why should such be? A remarkable phase of this egg business is well expressed by Mr. J. A. Gunn, President of the Montreal Produce Exchange when he recently said in an address:—‘It is a remarkable fact that to the large purchasers there are several million dollars worth of eggs lost every year because they are not fit for sale, while consumers in Montreal were willing to pay the highest price for strictly new-laid eggs.’ He had no hesitancy in saying that ‘half a million of dollars was lost to the farmers of the country every year by their sending in rotten eggs.’ You will see how necessary is instruction to the farmers along these lines. I am sorry the time is up. I would like to show how this great loss occurs and how in a great many cases the eggs are partially hatched before they are off the farmers’ hands, and the farmers do not know it. Indeed, the trouble frequently begins with the eggs laid in the nest. I refer of course to fertilized eggs. Hens sitting on a nest full of fertilized eggs, if only for a few hours will cause germ development. The farmers should know all these facts. They have an all-important effect on the keeping quality of the egg. I have no time to say more on these very important facts. The large purchasing concerns say ‘We are willing to pay the highest values for a guaranteed new-laid egg, but we will not pay these prices for partially hatched eggs.’ Now I want the farmers to get the best prices.

Mr. SPROULE.—The chickens have not exactly got their feathers on when the egg is eaten.

Mr. GILBERT.—No, but they are far advanced that way in too many instances.

By Mr. Best:

Q. If a farmer lives six to eight miles from the market and has one hundred hens and he gets three dozen eggs per day, it would not pay that man to bring his eggs that distance to sell them. He has to keep them one week and try to make a weekly trip to the market?

A. Let the eggs then be strictly non-fertilized and there will be no danger of germ development. It is to be remembered, as a rule, the eggs on the farms of the country are fertilized and germ development will surely take place when conditions are favourable.

By Mr. Thornton:

Q. In our section the egg-buyers come twice a week and gather up all the eggs?

A. Yes, that is the right way. I should really have divided farmers into three classes:—1—those that are near towns and cities; 2—those that are near express offices; 3—those who are away back.

By Mr. Sealey:

Q. What plan have you for preventing the eggs lying in the country store-keepers’ store for a long time before they go to the larger markets in Montreal?

A. The President of the Montreal Produce Exchange has the proper way of dealing with that difficulty, and that is to have a law passed to punish people who sell partially hatched or rotten eggs, as they do in the United States.

Q. The result of your investigation is that for both large eggs and small eggs it is nourishment and actual money’s worth that count?

A. Yes.

By Mr. McCraney:

Q. There has been an importation in Toronto of Siberian eggs which are largely used by bakers. Has your department any information as to the extent of the importation?

A. No information. In further answer to Mr. Sealey, let me say that the smaller eggs are laid by pullets as a rule, the larger eggs by hens. There is no discrimination made in the value of eggs according to size. Yet, some large purchasing concerns do

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discriminate. I once sent several dozens of new laid eggs to a well-known dealer in St. Catherine street, Montreal, and I wrote asking him to place his own value on them. I did this as an experiment, and the dealer wrote back saying: 'I allow 35 cents a dozen for your pullets eggs and 50 cents for the hens eggs.' The nutriment in both cases is the same, and as to that much depends on the quality of the food eaten by the hens.

By Mr. Sealey:

Q. You mean to say the nourishment to the human being is just as great from a small egg as from a large egg?

A. Yes.

Q. I do not mean proportionately, but the whole egg?

A. In that case I prefer the larger egg of the hen.

Q. The one contains two cubic inches of material and the other three inches. Is there as much nourishment in the two inches of material as in the three inches?

A. No.

Q. It is just in proportion then?

A. Exactly so.

Q. And the three inches contain one-third more than the two inches?

A. I should say that is what it amounts to.

By Mr. Sproule:

Q. Is it a fact that black hens lay larger eggs than the white ones—the Black Spanish, for instance?

A. Yes, in many instances.

Q. Compare them with the White Leghorns?

A. It is very much a matter of strain. All large egg-laying is a matter of strain. There are some breeds, like the Black Minorcas and Houdans, which usually lay very large eggs. So do some varieties of Leghorns.

By Mr. Sealey:

Q. Do you recommend the selling of eggs by count, as they are done now, or by weight? Do you say that the man who produced three cubic inches of material in his egg should not sell them at the same price as the eggs with two inches of material?

A. I have contended for long that the eggs should be sold by weight. A member of this Committee, a gentleman you may remember, Mr. John McMillan, was preparing a Bill at the time of his death to that effect. He was a great advocate of selling eggs by weight, and I certainly think they should be so sold.

The CHAIRMAN.—I desire, Mr. Gilbert, to congratulate you upon the address you have delivered this morning, and which has been one of the most valuable and practical that we have ever had. I also wish to express my great pleasure at the large attendance of members this morning and the great interest which they have displayed in the subjects discussed. If acted upon by the farmers your address will be worth a large amount of money to them.

Committee adjourned.

Certified correct,

A. G. GILBERT.

CO-OPERATIVE FRUIT CULTURE

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, February 1, 1911.

The Select Standing Committee on Agriculture and Colonization met at eleven a.m., Mr. Schell, Chairman, presiding.

The CHAIRMAN.—We are pleased to have with us to-day Mr. James E. Johnson, of Simcoe, Ont., Secretary of the Norfolk Fruit Growers' Association, who is to speak on 'Co-operative Fruit Culture, and Marketing of Same.' Most of you have heard something of the work that has been accomplished through the association of farmers, in the growing and shipping and handling of apples particularly, although their work has extended in a measure to other fruit. The work that has been done by our government in eliciting information on scientific lines, as you know, has been a very great work. But one of the greatest difficulties has been to get the information put into practical operation. Millions of dollars have been spent along technical lines relating to agriculture, and if the farmers of this country were to put into practical operation half of the valuable information that has been presented to the public from our colleges, from our experts, from our experimental farms, we have been told that the crop of the Dominion of Canada might easily be doubled. Perhaps that is not too extravagant a statement to make. The object of bringing Mr. Johnson before us this morning is to tell the committee some of the practical work that has been done by the farmers in the county of Norfolk where they have co-operated, where the example of one farmer has spread, so that from a few who first joined together in the cultivating, spraying and handling of their fruit, quite a large number have now joined the association, and thousands of barrels of apples are now being produced annually through this association. Mr. Johnson is the secretary and treasurer of that association, and as a practical handler and a practical grower of fruit we thought he could give us some very valuable information.

We are, therefore, very much pleased to have him with us this morning, and I trust you will give him kind attention. I think, perhaps, it would be wise—as I have before hinted to the committee—to allow the speaker to complete his address without much interruption, and for members of the committee to discuss the paper after he has concluded his remarks. I have much pleasure in now calling on Mr. Johnson to address you.

INTRODUCTORY REMARKS.

Mr. JAMES E. JOHNSON.—Mr. Chairman and gentlemen of the committee, I shall be brief in my remarks, and I will not dwell upon any particular part of this great subject of agriculture very long. I shall endeavour to inform you in as practical a way as I can of the success which has been accomplished in the county of Norfolk in co-operative fruit culture and the marketing of the same, and to tell you that equal success can be achieved in many other counties in Ontario and other provinces of the Dominion.

The upbuilding of agriculture is one of the greatest subjects that could occupy any person's attention. Unfortunately, our farmers have been inclined to indepen-

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dence from childhood, and in many cases we find jealousy combined with that independence. In order to best solve the problem of how to advance the growth of any industry public funds should be devoted to the spreading of education and the demonstration of sound principles in such a manner as would benefit every man, woman and child in the Dominion. Agriculture being the greatest industry in this country, it should receive the greatest amount of consideration. It is an industry that should be taught in every room of every school in Canada, and in this connection an effort should be made to have the children appreciate the great value of co-operation. There should be works on bookkeeping available for farmers at reasonable prices, and these should reach as many farmers as possible. It is absolutely necessary for a modern farmer to keep a set of books so that at the end of each year he may be able to tell in which department of his farm he is making the most money. By following a system of bookkeeping the farmers will acquire most valuable information as to what part of their farms is paying them the best. This would lead to the farmers paying special attention to that branch of agriculture which yielded the greatest crop. Some farmers make a specialty of horse breeding, and other of other branches of stock-raising. A great many engage in dairying, others again in the raising of crops for canning purposes; and fruit growing is by no means the least important of the great agricultural industry. In this connection practical demonstrations are of great value, showing the farmers how to specialize in everything that can be grown on their farms and impressing on them that the great secret of success is to invest money in order to make money. This has been specially demonstrated in the apple growing industry in the county of Norfolk since 1903.

Before dwelling on the growing of apples, I want to give you an instance of a farm of 100 acres, just one mile outside the town of Simcoe, which I bought four years ago. I do this to demonstrate the point that one must invest money in order to make money. This farm has been carried on as a dairy and wheat growing farm, but I bought it with the intention of going into fruit growing. I have planted on that farm in the last four years no less than five thousand trees, and found it necessary to grow hoe crops for the growth of those trees. Two years ago my sales off that hundred acre farm amounted to seven thousand dollars, and last year they were eight thousand five hundred dollars, being probably at the least, three times the amount of sales which was derived in former years from that farm.

By Mr. Hughes:

Q. Were these sums derived from fruit growing?

A. Principally fruit and vegetable growing. I raised strawberries, potatoes and hoe crops generally. The next point of importance to consider is what were the net profits. I invested large sums of money in labour, which is certainly beneficial to our country. I netted two years ago over three thousand dollars, and last year the amount was over four thousand dollars. I did very little of the farm work myself, excepting the general management, and what has been done there can be done on many other farms in this Dominion.

By Mr. Armstrong:

Q. What kind of labour do you employ and what wages do you pay?

A. I employ the home labour that is available and the wages are \$1.50 a day. Excepting my year men. I am paying one of these \$350, and the other \$400 per annum, with free house, fuel and garden produce.

By Mr. Henderson:

Q. \$1.50 a day is not very big wages.

A. No, it is not.

Q. How many acres have you devoted to strawberry cultivation?

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A. Last year I had 15 acres, and the production amounted to ninety-eight thousand baskets.

By Mr. Hughes:

Q. Is the soil a sandy loam?

A. A sandy and clay loam.

By Mr. Blain:

Q. Were these strawberries grown in between the trees?

A. They were.

Q. Are we to understand that that helps the growth of the trees?

A. It certainly does.

By Mr. Sealey:

Q. Have you had any results from the trees yet?

A. Not from the apples, but I had one-third to one bushel of peaches from many of my three-year old trees last year.

By Mr. Currie (Prince Edward):

Q. Speaking of your fruit trees, do you deduct interest on your investment?

A. Yes.

By Mr. Edwards:

Q. I understand that you planted five thousand trees some four years ago?

A. I did that in the last four years.

Q. What proportion of your trees has lived?

A. Of apple trees?

Q. Yes, I refer to apple trees.

A. I should say about 98 per cent.

Q. Have you any special method of planting your trees that you would suggest as advisable?

A. No, I cannot say that I have. Planting is so well known by every one that I cannot say that I have any special plan to recommend.

Q. In explanation of my reason for asking the question, some people advise—I do not know whether it is correct or not—that it is well to dip the roots of the tree in water or in soft mud.

A. Puddle the roots.

Q. Yes, before putting it into the ground. Other people think it advisable to put on manure. I have heard that spoken of the putting of manure in the bottom of the hole where the tree is planted. What is your opinion in regard to that?

A. Very fine rotted manure may be all right, but I have my doubts, because the coarse manure would be a detriment, it would dry out the soil.

Q. Do you use either plan?

A. No.

By Hon. Mr. Fisher:

Q. Do you puddle the roots of your trees?

A. No.

By Mr. Hughes:

Q. Do you find that apple trees do well on clay ground?

A. Yes.

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By Hr. Henderson:

Q. What kind of apple trees have you?

A. We have all varieties practically. That is one of the troubles of our association. Last year we had sixty varieties.

By Mr. Wright:

Q. Have you good drainage?

A. Many of our farms have underground drainage. My farm has four and a quarter miles of tiling.

Let me refer back to apple growing generally, to the year 1896. I think all apple growers remember that year, which was one with an exceedingly good crop. We likewise had a good crop in the province of Ontario in 1898, and apples brought a very fine price.

By Mr. Best:

Q. Have the apples been falling off in quality since 1896?

A. I will answer that right now. From that time on the quality in Ontario, excepting perhaps in the case of cider apples, has been going back. From that time up to 1903 in the county of Norfolk there were not over five well cared for apple orchards. The fungus diseases materially affected the crop, so that the apples in unsprayed orchards were mostly only fit for evaporating, canning and cider purposes, and that condition exists even at the present time. Now, I am speaking generally of our southern Ontario apple growing community along Lake Erie. I have also travelled through the Lake Huron district and in the east, and I have found that where the spraying was not carefully done the apples were inferior. In 1903 and 1904 I gave practical demonstrations of the value of spraying in Norfolk county. I had been trying to get many of the growers in this vicinity to improve their orchard management, but it seemed impossible. In the year 1903 I purchased a farm that had an orchard on it. I set out to demonstrate to our people there in the county what I could do in careful orchard management. There were many who would come to me and say, 'It is useless for you to try to spray the trees; it has been demonstrated to be of no value.' That was the very reason it was so hard to get many people at that time to become interested in spraying. The demonstrations which I carried on in the county of Norfolk during the years 1903 and 1904 have, I am confident, been worth thousands of dollars to that county. I might go further and say that it has meant thousands of dollars to every county in the province of Ontario, because the same formula which I introduced there has practically spread all over the province of Ontario. It has been sent to Nova Scotia and many other places.

By Mr. Henderson:

Q. Do you have to contend with scale?

A. We do not in that section.

Q. Is it your own formula?

A. No. It was a formula I received from New York State, from some of the best growers there, and a formula which I have had printed in every horticultural paper in the Province.

Q. What is your formula?

A. The Bordeaux Mixture with excess of lime.

By Hon. Mr. Fisher:

Q. More than the ordinary quantity?

A. Yes, about four or five times.

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By Mr. Henderson:

Q. Do you ever use the lime and sulphur mixture?

A. The lime and sulphur mixture is a mixture that is necessary and must be used in all places where they have the San Jose Scale, and the Leaf Blister Mite. I may say that that insect is just putting in its appearance in the province of Ontario. Now, there are many orchards that have this Blister Mite that do not know what is wrong with their trees. But there is no use of using the Bordeaux Mixture for that disease. Therefore it is necessary that we use the lime and sulphur mixture in the first spraying of the apple orchards. The formula which I will use this year in my own orchards will be the lime and sulphur for first spray and the Bordeaux for second and third sprays, excepting in experimental plots.

By Mr. Henderson:

Q. I apprehend that the lime and sulphur is a very cheap spraying material and in that way may be commended.

By Mr. Armstrong:

Q. It has been in use in the Niagara District for years?

A. Yes, the lime-sulphur spray for the San Jose scale has been in use in the Niagara District. The spray mixture I recommend now would be a lime-sulphur mixture, concentrated form, either made at home or bought from the manufacturers.

By Mr. Hughes:

Q. You mean that which is already in use?

A. While the trees are dormant, use the concentrated mixture with a test of 32 Baume, using 8 parts of water and one of lime-sulphur. Now, that is stronger than many manufacturers will advise you to use it.

By Hon. Mr. Fisher:

Q. What proportion of lime and sulphur?

A. The proportions I will give later. It can be manufactured at home, or you can purchase it from the manufacturers who are already established in the province of Ontario.

By Hon. Mr. Fisher:

Q. Do you buy the manufactured stuff, or do you make it yourself?

A. I make it for my own orchards.

By Mr. Wright:

Q. Is it much cheaper to make it yourself?

A. Considerably.

By Mr. Henderson:

Q. In the manufacture of this lime stuff for mixture do you find it profitable to use a high-class lime or a 25 per cent lime?

A. You must use a high-class lime.

Q. I had a statement from one of these men who manufactured the lime-sulphur mixture, that if he had known a year sooner to use a high-class of lime instead of using a 40 to a 45 per cent lime, he would have saved \$1,000 a year?

A. That is correct. It is necessary to use a high-class grade of lime, for if you use a low grade it is hard to tell how much lime is necessary.

FORMATION AND GROWTH OF NORFOLK FRUIT GROWERS' ASSOCIATION.

Now, I wish to take up the co-operative work. In 1906, I formed the Norfolk Fruit Growers' Association, and all I could get together after hours and days of talk was seventeen. I canvassed all the best fruit growers in the county and tried to get

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them to organize a fruit growers' association. That year we shipped 4,000 barrels of apples. In 1907, we were successful in getting 52 members and the output was 10,000 barrels. In 1908, there were 152 members and the output was 15,000 barrels. In 1909, there were 188 members and the output was 19,000 barrels. In 1910, there were 335 members and the output was 36,000 barrels, with a valuation of \$103,494.56. That will demonstrate to you the growth of our association; five years ago only 17 members; last year 335. And I am sure I am safe in saying that we will have at least 400 this year. Now, besides the 335 members we had last year, the work of orchard growing has spread so that there are about 25 other well cared for orchards in the county, the owners of which are not members of the association. Many say that if the association would pick their apples they would join the association. That is the only reason practically why they do not join. They are paying for their picking from double to treble each year what it is costing our members as a whole, because on an average they sell at a considerably less figure than I am able to net our members. I may say that we have shipped our apples to all markets. During the five years under review we have shipped about fifty per cent to the Northwest provinces, whilst twenty-five per cent went to the United States and twenty-five per cent to export.

By Mr. Blain:

Q. On which shipments did you make the most money?

A. All the apples were sold at the same price. We have had the same figure from all places.

By Mr. Armstrong:

Q. What kinds did you sell to the Northwest and what kinds to the United States?

A. Each year excepting the present, we have divided our districts into stations and given the same varieties to each place. That is excepting this year, when we shipped four cars of Greenings to the Chicago market separately.

By Mr. Sharpe (Lisgar):

Q. Are the apples picked that you sell to England?

A. Yes.

By Mr. Armstrong:

Q. They have been specially selected?

A. Yes.

By Hon. Mr. Fisher:

Q. They are graded the same to all the markets?

A. Yes, they are graded the same to all the markets.

By Mr. Sharpe (Lisgar):

Q. Do you send poor apples to the west?

A. We send exactly the same quality of apples to the west as to export and to the United States; there is no difference whatever.

By Hon. Mr. Fisher:

Q. The grade is the same for all markets?

A. Yes, and our brand of apples is becoming well known in all markets.

By Mr. Best:

Q. Is your net profit on apples the same in the case of those sent to the north west as in the case of those sent to England?

A. We send all apples f.o.b. Simcoe, spot cash before the wheels turn.

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By Mr. McCall:

Q. I would like to know if the grade has improved since the organization of your association? What is the percentage of first class you get now as compared with the percentage you got the first year? That will show the result of your organization and of the methods you follow. You need not answer the question now if you are going to refer to it later on?

A. I can answer the question now. In the year 1903, when I took first class care of my orchard, I got just as high class fruit as we are getting this year; we did our work so thoroughly that we got the same grade. But I consider this: taking the 335 orchards—and practically there are a great many more than that, because many of our members are renting other orchards—the percentage of high quality apples in the county of Norfolk at the present time, compared with six years ago, is about nine times greater than to-day. There were four thousand barrels shipped in 1906—

Q. What percentage of the total grades as number one?

A. That differs with each season.

Q. Could you give us a comparative classification of the crop of the first year to show how the treatment had improved the grade? That would be of value to the committee?

A. In answer to that let me say that if the growers had done their work thoroughly in 1903, they would have extinguished all fungus diseases and all insect enemies for that year. Coming to 1910, in that same orchard if you did not do your work quite as thoroughly you would not get nearly as good results as you obtained in 1903. It is the thoroughness of the work done each year which tells.

Q. What percentage of this year's crop was first class?

A. Our percentage this year was 76.5 of number one's.

Q. What was the percentage the first or second year of your organization?

A. I could not give you that information. Very often we are liable to get hail in our section and that will of necessity result in the grading of quite a lot of number two's. This year we had some hail and yet the percentage of number ones was 76.5. Any of the gentlemen here who are in the apple business will agree that that is a high percentage of firsts.

Q. How do you get the apples inspected?

A. This year there were twelve inspectors appointed to go around and look after the inspection of fruit. In addition, there is a government inspector who frequently visits the orchards and shows the packers how to take care of the fruit and pack it in the best manner.

By Mr. Sexsmith:

Q. Was the 76.5 per cent of number one's the percentage of all fruit that was produced on the trees?

A. No, not at all.

Q. That is quite a different thing.

A. Certainly it is.

Q. That puts a different colour on the thing, because you might take 76 per cent and if you refused to take the balance it might leave 90 per cent of culls out of the whole product.

A. Our culls are sold to canning or evaporated apple factories or cider mills. I therefore cannot give the percentage of culls.

Q. What percentage would your number one's bear to the total?

A. I could not give you that information because some of our farmers sell their cider apples and there is no way of getting figures. Some orchards would be far higher than others in the high grade yield. It is according to the care and attention bestowed on the orchard.

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By Hon. Mr. Fisher:

Q. Then, Mr. Johnson, your association always packs apples that will grade higher than culls?

A. That is all. We only pack two grades, number one's and number two's

By Mr. Sexsmith:

Q. That is all that the packers pack now excepting for evaporating purposes?

A. Yes.

By Hon. Mr. Fisher:

Q. Speaking of your own orchard what proportion of apples have you been obliged to sell as culls, roughly speaking?

A. That would vary with different years. Now, you take some years we will barrel up to 80 or 90 per cent of high grade apples, and other years not more than from 65 to 70 per cent.

By Mr. Sexsmith:

Q. That is number one's and two's?

A. Yes, and in our orchard the balance would be culls

By Mr. Sealey:

Q. All these orchards have had first-class care, have they not?

A. It is impossible to get the whole 335 growers of our association to give their orchards equal care. Therefore there is as much difference in orchards, practically, as there is in men.

Q. Have you any authority as manager to see that they do keep their orchards up?

A. No, simply ask them to do it, and they will be the losers at the end of the season if they do not take first-class care. We are very careful with our own orchards.

By Mr. Sharpe (Lisgar):

Q. You said you had twelve inspectors. What are their duties?

A. They are representatives of the manager in different localities. We loaded at 19 stations this year. I will give a certain section to one inspector who must look after the packing and the shipping. That is the only way in which the manager can handle such a large association, by dividing it up into districts.

By Mr. Chisholm (Huron):

Q. Is every barrel that is sent out inspected?

A. Certainly not, the barrels are not all inspected. The apples are packed mostly by our growers, although we have forty or fifty packers at work besides. But we have been able to show our growers that it will pay them to be honest in their work, and we have accomplished that to a very large extent.

By Mr. Sharpe (Lisgar):

Q. In the West we have very great difficulty in getting apples from the East that are up to the standard at all?

A. In what part of the year?

Q. In almost every part of the year. We buy from the dealers in Winnipeg who secure carloads of the Eastern crop for the West. We buy from them in Winnipeg and we have found the very greatest difficulty in getting apples from Ontario that are up to the standard at all?

A. I quite agree with you. I have sometimes been in those far Western markets and really felt as though I was ashamed to be a Canadian.

Q. And so have I.

A. But still let us not put all the blame upon the apple buyer for that. I have been in the apple business for a good many years. We will employ this man with a

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gang of packers, and that man with a gang of packers, and therein lies our difficulty in always securing men who will pack the apples of the high grade that should be packed.

By Hon. Mr. Fisher:

Q. But your association has succeeded in doing that?

A. Yes, we have succeeded in doing it.

By Mr. Sharpe (Lisgar):

Q. I should think your twelve inspectors would have charge of that work

A. They have charge of it.

Q. Very often we buy a carload of number one's and upon opening them up we find them nothing but number three's. That gives you a great deal of trouble.

THE PACKING OF APPLES BY THE ASSOCIATION.

A. I might just take up this packing of apples. This is a circular that has been issued to all our members. (Reads):—

'PACKING OF APPLES IN BARRELS.

'First get your ladders, picking baskets, packing table, stemmer, press, leveller and plank on hand, also engage your pickers and packers so when your apples are ready to pack you are in a position to do so. Packing demonstrations will be given. Study the rules below for the handling of your apples.

'2nd. Picking should be done with care, and handle the apples so they will not be bruised. Never pick apples off the ground and put in the barrels with hand picked No. 1 or No. 2 apples.

'3rd. Drive all quarter hoops down firmly and nail with three nails in each upper quarter hoop. Then drive hoops well down on the end of the barrel with poorest head and nail with four nails. Then head line by using four nails in each head liner. Exercise care in headlining and drive nails slanting. If nails show through to outside of barrel don't clinch, but take out and drive right so it does not show through. Now, take out the other end of the barrel and clinch the quarter hoop nails. Use $1\frac{1}{2}$ inch wire nails.

'Next stencil your barrel.

'Now you are ready for packing.

'If using paper place this in the end of the barrel. With great care pick out and stem your facers, not the largest, but the average size of grade you are packing. See that every apple is a perfect one with the very best colour you have to choose from. You should not have any difference in size of your facers, but if you should have, place the smaller apples to the outside row and the larger ones to the centre. A good many of unexperienced packers do the opposite. Always place stems down, with the exception of long shapely varieties, as Gilliflower and Bellflower, which lay red cheeks down. The sorting must be done carefully, and reject all worms, fungus spots, bruises and unshapely apples both for No. 1's and No. 2's. Now, place your barrel on a plank and after each basket of apples is emptied, give the barrel several quick, short shakes. You will have to be governed according to the size of the apples you are packing how full to fill the barrels before using the leveller. At all times level so it will take one row, blossom end up, on top and leave your apples about half-inch above staves. Care must be exercised in racking down very carefully. Nail and headline your barrel and same is ready for shipment.

'Size for Snows, Golden Russet and kindred size varieties, $2\frac{1}{4}$ inches and over, of good colour, for No. 1's and $2\frac{1}{8}$ inches and over, showing some colour, for No. 2's.'

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Now you will notice this is a higher grade of apples that we are asked to pack by the Fruit Marks Act, and that is what I am trying to accomplish. I want to build up a reputation for the finest quality of fruit which always demands the best price. Price is soon forgotten, quality is never forgotten.

By Mr. Sexsmith:

Q. Then your association only packs No. 1's and No. 2's?

A. Yes.

By Mr. Sealey:

Q. Does your association brand everything the same?

A. Everything has the same brand.

Q. What is your brand?

A. 'Norfolk Fruit Growers' Association' in big letters.

By Mr. Chisholm (Huron):

Q. Does the name of the party who grows the apples go with the barrel?

A. Yes, every name is printed on a card that goes with the barrel. I will deal with these cards very shortly. (Reads):—

'Size for Spies, Greenings, Kings and kindred sized varieties, 2½ inches and over, of good colour, for No. 1's, and 2¾ inches and over, showing some colour, for No. 2's.

'Don't pack any No. 2's in Talman Sweets or early fall apples, such as Jen-neting, Calverts, St. Lawrence, Maiden Blush. &c. Pack very few No. 2's in odd winter varieties. Let No. 2's chiefly consist of Snows, Greenings, Spies, Baldwins and Russets, and reject all worms, fungus and bruises.

The number on every barrel is the growers name, and each grower will be paid for his fruit according to varieties and quality, and it is the duty of each grower to see that his apples are packed according to the above instructions, as you are personally responsible.

4th. Don't allow your barrels to get wet either before or after packing. When apples are packed either load on cars or place in a sheltered cool place with plenty of ventilation.

5th. All members should help to build up our reputation in honest packing of apples."

So you see it is a very nice thing that 335 of our members can learn by means of this circular how to properly pack apples according to grade.

By Mr. Hughes:

Q. How do you find out when apples are not packed properly, do you open the barrels?

A. We have our twelve inspectors.

Q. And do they open up the barrels?

A. They open up many barrels and they will drop into many an orchard from time to time.

By Mr. Sproule:

Q. Have you often found that apples were not packed according to the sample, or according to directions?

A. Not often. We have encountered such instances, but they generally occur through ignorance.

Q. You seem to be more fortunate in that respect than you are with your good roads?

A. Now, let me read another circular (reads):

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TO THE MEMBERS OF THE NORFOLK FRUIT
GROWERS' ASSOCIATION.

SIMCOE, Ont., Sept. 6, 1910.

The manager of your association has carefully prepared rules for packing of apples, which kindly follow very closely. Any member not accustomed to the packing of apples should not attempt to pack his own apples, but have your manager send you an experienced packer so you may learn how to pack apples. We want all of our members to learn How to Pack, as all apples are settled for according to grades, variety and packing.

The cooperage of a barrel is very important.

See that all quarter hoops are driven down firmly before nailing, also the end of barrels you head-line.

If the barrel has shrunk so top hoops drive down below the end of the staves, take hoop off and put it back on, adding a small piece of hoop on the under side of the hoop.

See that every barrel is in perfect shipping condition.

Only pack No. 1's and No. 2's of the following varieties, Greenings, Baldwins, Spy, Snow, King, Spitz.

All other varieties, both fall and winter, pack only No. 1's excepting where a tree of the varieties are not good enough to take a large proportion of No. 1's; in such case pack them up A Good Grade and mark them all No. 2's.

Our packed apples are sold at a good price this year and we must give the buyer good value. We will also get a good price for all our cull apples. Rubber stamps, with your name and address, will be furnished to every member of our association for the sum of 25 cents for both rubber stamp and pad, and it is the duty of every grower to see his name is stamped on the head of every barrel, also on the card placed inside of the barrel. The packing of our association apples this year in first-class workmanship will mean to our members next year twenty-five cents per barrel advance, with apple crop conditions equal to this year. I know that every member of our association is anxious to advance our reputation for honest packed apples. Packing demonstration notice will be given later. Ladders, presses, stencils, headliners, nippers, pick-baskets on hand. Make known your wants to the manager.

'Yours respectfully,

'JAMES E. JOHNSON,

'*Manager, Norfolk Fruit Growers' Association.*

By Mr. Hughes:

Q. Where do you sell the apples?

A. We ship 50 per cent to the Northwest, 25 per cent for export and 25 per cent to the United States.

Q. Have you had any complaints about back packing?

A. I have had this year four complaints.

Q. I mean from the buyers in distant parts?

A. I have no complaints from individuals, and I received 260 letters congratulating us upon the quality.

By Mr. Burrell:

Q. You say 25 per cent for export; what do you mean by that?

A. I mean shipped to the old country, Glasgow, Scotland, particularly. I shipped 25 per cent to the United States, but we do not regard that as export.

Q. That is this year?

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A. No, for the last five years.

Q. An average of five years?

A. Yes.

Now we place a card in No. 1 barrels and a card in No. 2 barrels

By Mr. Hughes:

Q. With the man's name on each card?

A. Yes. Here is one from one of our members, Alex. Wallace, Simcoe, Ont. 'This is a No. 1 barrel of apples grown and packed by Norfolk Fruit Growers Association, Simcoe, Ont., Canada. As growers of these apples we are desirous of establishing and advancing a reputation for honest packing of fruit. We want every consumer to know our pack, and to realize that for quality and flavour we are unexcelled in the growing and packing of Canadian apples. We cordially invite and ask the user of this barrel to write the manager his candid opinion; always refer to the grower's name on this card.'

Q. That is signed by you?

A. That is signed by the Norfolk Fruit Growers' Association, James E. Johnson, manager.

Here is a letter from Winnipeg which came back: 'We have just finished using a barrel of Northern Spy apples grown and packed by your association, and am writing to show our appreciation of the same. They are without doubt the most luscious fruit we have had the pleasure of eating for some time. British Columbia or Washington grown fruit cannot be compared in any shape or form with these apples, either for cooking, eating or for a good hardy fruit. The grower's name is Alexander Wallace, Simcoe, Ont.'

It is quite necessary that we should all boom the country we live in. Now, here is another card sent back, Grower, James E. Johnson, Simcoe, Ont., sent from Gladstone, Man.

'In reply to your request on opposite side permit me to say that the two barrels of No. 1 apples which was packed by your company has given entire satisfaction. They are away ahead of any apples we have been able to get in this town for the last twenty years. They are honest packed.

'Yours truly,

J. K. McLENNAN.

By Mr. Sharpe (Lisgar):

Q. Do you sell to wholesalers in Winnipeg?

A. In 1909, we sold to the Rogers Fruit Company; Bright, Emory, & Co., Winnipeg, and Stockton & Mallinson, Regina. Last year we sold a large percentage of our crop to J. G. Anderson, a local buyer in Ontario, and he shipped a large percentage to the Winnipeg and other Northwest markets. Mr. Anderson unfortunately was taken ill with typhoid at the beginning of the apple season, so it was necessary that he employ some one to handle the orders for him. I am sure he is well pleased with the results. I had a communication saying that he was very glad that this year he had purchased his apples from an association like the Norfolk Fruit Association, because he felt that having been sick he would not lose anything.

By Mr. Sharpe (Lisgar):

Q. Would it not be better to sell direct to the retailer?

A. Right you are. I think the day will come when probably we may do so, but there is just a question upon that. The retailer will not forward his money to the point of shipment before the car-wheels turn. He wants 30 days, and then sometimes there are some retailers who when they get the apples into their possession are liable to make complaints.

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Mr. SHARPE (Lisgar).—They are all contracts in the west

Mr. JOHNSON.—Well, I have had considerable experience in handling apples in a wholesale way. I have packed a great many apples. That has been my business for a good many years and I have generally sold to the retail trade, and the people of the northwest will have to be different from the ordinary people if we do not get complaints from some of the retail dealers. Now, here comes another letter from Newbury, Berks, England.

‘I have often thought that I would send a reply to the cards that you put in barrels of your apples, so at last I have managed to do so. I must say that they turn out in splendid condition. We never get more than three or four bad ones in a barrel. I consider that that is very good when you think of the distance they have to be sent. No. 1 Baldwins we are having at present. I myself am an assistant in a grocery and general store in this town and I should not mind coming to Canada on a fruit farm. If it would not be troubling you too much, would you let me know what prospects I would have of getting a job on a fruit farm. I cannot honestly say that I have much knowledge of fruit farming, but am not afraid of work and think that I should soon learn. Are there any agencies out there that find you jobs when you arrive, or does your association find any for immigrants? I should like to know if you would kindly do so. I might say my age is 24, and the apples were packed and grown by Mr. John Dyer, Walsh, Ont.

Now, I may say I have received many letters like that from people wanting to come to this country and wanting to find out about our fruit industry.

Mr. SPROULE.—You appear to be doing a little immigration agency work on the side.

Mr. JOHNSON.—Here is another card from Nutfield.

By Mr. Hughes:

Q. Where is Nutfield?

A. I think it is in England. I am quite sure it is. This came back on January 14th. Here is a letter also from L. E. Bliss, Crown Fire Ranging & Timber Office, Ombabika, via Nepigon.

‘I purchased from Revillion Bros., of Nepigon, two barrels of apples. In both barrels I found a notice requesting purchasers to notify the association in what condition the apples were found when opened. One of these barrels was No. 1 Greening. Grower’s name was E. Watson, Simcoe. The other barrel was No. 1 King. Grower’s name, William Burt, Simcoe. The apples in both these barrels were in splendid condition. I will just give you an idea how much handling these barrels had after they left Nepigon. They were hauled to a small steamer and put on board. They were taken 12 miles by this boat and put in a small tramway and then hauled 18 miles, when they were put in a larger steamer and brought 60 miles across Lake Nepigon. The steamer was unable to reach the dock as Ombabika Bay, which is part of Lake Nepigon, is frozen over. They had to unload at the Gap, a distance of 14 miles from where I live. I sent my dog team out and brought the barrels in, and in taking them out of the barrels to pick out the rotten ones, I am pleased to add that we did not get one rotten apple. In conclusion I may add that I will not have the slightest hesitation in recommending apples shipped by your association to my friends.

‘Yours truly,

‘(Signed) L. E. BLISS.’

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PRICES OBTAINED BY THE ASSOCIATION FOR ITS APPLES.

By Mr. Hughes:

Q. What price do your apples sell for in Winnipeg?

A. We have sold all the way from \$5 to \$7.50 a barrel.

Q. And the price is often higher?

A. Probably.

Q. What is the freight on a barrel of apples to Winnipeg?

A. It would cost probably about 85 cents.

Q. So you can easily sell your apples for \$6?

A. Not at all. If you were to go into a store here and purchase a dozen lemons you would probably pay 40 cents a dozen for them.

Q. I am not talking about lemons, but about apples?

A. I am trying to make a comparison with the retail figures. I can go and purchase lemons for \$3 a case, but the retail price will be 30 or 40 cents a dozen. That is the difference between the wholesale and retail prices.

By Mr. Sproule:

Q. You spoke about shipping 50 per cent of your higher grade apples to the west. How many barrels would that be?

A. That was for the five years.

Q. Do you mean 50 per cent every year or on the average?

A. No, I mean the average for the last five years. This year about twenty-five thousand barrels went to the Northwest.

Q. How much would it be every year?

A. It varies.

By Hon. Mr. Fisher:

Q. You sell your apples to a dealer, you do not inquire where he sends them?

A. Not at all. We never inquire where he sends them.

Q. The dealer sends the apples to England, the Northwest or wherever he finds it suitable for his business?

A. That is true.

The next important part of the work of our association is settling with our growers after the apples have been packed. Now, it is only fair to those having Northern Spy apple trees that they get a better consideration for these apples than for Talman Sweets and other varieties. We all know that if we want a barrel of apples we generally want a barrel of Northern Spies, and that is the reason why we have pro-rated this variety of apples at a higher price. We find that this system of pro-rating has worked very nicely with our association and to the satisfaction of all. Land values have increased wonderfully in our county during the last few years. One orchard, the largest in the county, only a few years ago sold for \$4,500.

By Mr. Sproule:

Q. How many acres?

A. 40 acres. In 1906, this orchard was sold for \$10,000.

By Hon. Mr. Fisher:

Q. You mean the fruit in it?

A. The land and all. Last year this same orchard was sold for \$17,000.

By Mr. McCall:

Q. What is the probable value of it to-day?

A. That is a very hard question to answer.

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By Mr. Wright:

Q. Does that increase apply to land in apple trees only?

A. It has increased the value of the land without trees.

By Mr. Sproule:

Q. Am I correct in thinking that the land and all was sold for \$10,000?

A. Land and all was sold in 1906, for \$10,000 and last year for \$17,000—land and all.

By Mr. Wilson (Lennox and Addington):

Q. What year was it sold for the smaller amount?

A. The smaller amount was about the year 1901.

By Mr. McCall:

Q. What was the revenue of that orchard?

A. I cannot give you that.

I have here several accounts. The first gives my demonstration in an orchard which had never been known to produce over \$60 worth of apples.

By Mr. Sproule:

Q. What kind of trees were planted there?

A. The orchard consists of 15 or 20 varieties. The first year, 1903, I gave this orchard exceptionally good care, sprayed it thoroughly, fertilized it, drained it, and after paying all the expenses of gathering the fruit it left in receipts \$1,192.70. The next year, 1904, I sold on the tree for \$650.

By Mr. McCall:

Q. How many acres are there in that orchard?

A. 250 to 300 trees. Now, in 1907, the net profit, after paying all expenses of the orchard, was \$885.04. These figures do not include the cider apples.

By Mr. Wilson (Lennox and Addington):

Q. That amounts to only a small sum?

A. It amounts to quite a considerable amount.

Q. How much would it be?

A. This year we received as high as $37\frac{1}{2}$ cents per bushel.

Q. For windfalls?

A. That is right.

Q. That is a good deal more than we pay in our section.

A. Well, we cull our apples so close that the culls are very good. We try to make a good grade all the way through and get the top price.

By Mr. Thornton:

Q. What was the average price per bushel?

A. Last year 70 cents, and two years ago 35 cents per 100 lbs.

By Hon. Mr. Fisher:

Q. Are you speaking in reference to the crop of the members of the association?

A. Yes, I generally sell the apples. The members take them in and collect their pay.

By Mr. Lalor:

Q. Do you sell the culls to a canning factory?

A. Yes, to a canning factory and evaporating factories.

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By Mr. Burrell:

Q. The evaporating factory pays the same price?

A. Yes.

Now here is the account for the last few years in the same orchard. In 1908 profits were \$1,539.08, in 1909, \$1,890.51, and in 1910, \$1,532.60.

By Hon. Mr. Fisher:

Q. Was the increased price in 1909 due to an improvement in the quality?

A. Yes. I have the accounts of several other orchards the same way. Take that of Robert Waddle. He received a cheque for \$1,572.96 in 1907. In 1908 the amount was much smaller, being only \$461.07. In 1909 Mr. Waddle received \$1,132.16; 1910, \$1,492.49. This grower lives a short distance from the town of Simcoe and has around 300 trees.

By Mr. Lalor:

Q. Can you give an idea of the net returns from the export of apples to the British market as compared with the sales in the Canadian Northwest?

A. The percentage?

Q. Yes.

A. In taking that up you see I have no wholesale figures. The apples for export are all sold at auction, and it would be very hard to check them up again.

Q. I do some exportation of apples myself, and the season before last our apples brought a much better price in the Northwest than in the British market.

A. If you had shipped your apples two years ago I am afraid you would have had a serious loss in the Northwest, because the apples sold in that country at that time at practically a loss.

Q. That was not my experience. I made money on it?

A. Did you ship early or late apples?

Q. I shipped late apples, Spies, Baldwins and Greenings.

A. As long as you can ship large quantities of Spies to the Northwest, they are always glad to buy them, but our percentage of Spies does not warrant that. We only ran this year approximately 15 per cent of Spies in our whole association.

Q. I come from the adjoining county where the percentage is not large.

A. What county?

Q. The county of Haldimand.

By Mr. Blain:

Q. You said that the grower of apples was a loser in the case of bad packing. Did any of your members lose anything last year?

A. Yes, they did.

Q. How much did they lose?

A. I could not give you the figures.

Q. Was it only a small percentage?

A. Very small. I think it ran in the neighbourhood of thirty or forty dollars altogether.

Q. Touching about how many members?

A. I think five.

By Mr. Lalor:

Q. It was purely the fault of the packer?

A. Yes.

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By Hon. Mr. Fisher:

Q. Was that loss determined by the inspectors' making a report on bad packing, or was it due to the returns after the fruit was sold?

A. It was due to complaints after the fruit was shipped. If we had caught the shipment in question, our inspectors would not have allowed them to go forward, because we are trying to do all we can to build up a reputation for our fruit. We want to grow a quality of fruit which we can ship to any market.

By Mr. Sealey:

Q. You have said that Spies are superior to all other varieties. About what is the difference in value of Spies as compared with the lesser sought varieties?

A. We were this year offered \$4.25 for our Spies by an outside buyer, but we sold our whole pack for \$2.90.

By Hon. Mr. Fisher:

Q. That is for numbers 1 and 2?

A. Yes, we had 5,400 odd barrels of Spies this year.

By Mr. Sealey:

Q. Suppose one of your members had 500 barrels of Spies and another member had 500 barrels of other qualities. Do they both get \$2.90?

A. No. We pro-rata those apples.

Q. On what scale?

A. The scale would run from \$4 down to \$2 a barrel. We made up our minds not to take No. 2 falls, and still we got in fifty or sixty barrels, but we only allow them \$2 a barrel. They could have got just as much money by taking them to the evaporator. So you see they are kept down to very low prices. The case of No. 2's of Baldwins and such varieties, the pro-rata scale goes down from \$4 to \$2.35 or \$2.40 a barrel.

By Mr. Lalor:

Q. As the market turned out afterwards, those apples did not make a very good sale?

A. I consider we made a very good sale, bearing in mind the varieties we had. We cannot expect as apple producers to bleed the other fellow every year. We do it about four years out of every five, and this year it may look to you as though we have got probably too small a price, if so we will get our money back next year probably.

Q. If you had sold them yourself you would have got probably \$4 a barrel?

A. I was the party who sold them.

Q. If you had kept the apples and exported them yourself?

A. Yes, if our hind sight was as good as our fore sight we would do lots of things differently.

Q. You spoke of rented orchards. What is about the average price paid for a period of about five or ten years?

A. It is according to the bargain, from fifty cents to a dollar a tree.

By Hon. Mr. Fisher:

Q. It depends on the variety?

A. Certainly.

By Mr. Currie (Prince Edward):

Q. Is your trade mark registered?

A. It is not registered.

Q. Could not anybody else put that trade mark on their barrel at the present time?

A. I am not so sure they could. I do not see how anybody could put the trade-mark of the Norfolk Fruit Growers' Association on a barrel.

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Q. I think they could. I know of one man who built up a particular name after several years of work and another man came along and registered it, and his apples are bringing a very much higher price as a result.

STEPS NECESSARY IN THE FORMATION OF A FRUIT GROWERS ASSOCIATION.

The first necessary step in forming a fruit-growers' association is the establishment of Rules and Regulations for the management. It is essential that same rules will not work automatically in all sections. Therefore it is necessary to have rules according to conditions. The rules for the Norfolk Fruit Growers' Association are as follows:—

1. This Association shall be known as the Norfolk Fruit Growers' Association.
2. The objects of this Association shall be to encourage the Fruit Growers in the County of Norfolk who are interested in the improvement of the quality and quantity of Fruit, to co-operate for the purpose of securing a better and more uniform system of packing and marketing of their Fruits.
3. Any person in the County of Norfolk whose interests are in harmony with the fruit-growing industry and is recommended by the Executive Committee may become a member by paying to the Secretary-Treasurer the sum of One Dollar, on or before the First day of April in any year, and such payment shall entitle such person to all the rights and privileges of membership for the ensuing year.
4. Any member of the Association may withdraw at any time during the month of January, by giving notice in writing to the Secretary.
5. The Annual Meeting of the Association shall be held on the first Wednesday in March in each year, at such place as the Association may select. The business of the Annual Meeting shall be the receiving and disposing of the Auditor's Annual Report upon the business of the preceding year, the Annual election of officers and such other business as may be brought forward by the Executive Committee.
6. All elections shall be by ballot, plurality electing, and shall be conducted by two scrutineers appointed by the chairman.
7. At the Annual Meeting five members shall be elected as an Executive Committee who will have the general management of the Association in buying, selling and any other business of importance. At any meeting of the Executive Committee, three shall constitute a quorum, for the transaction of business. Two Auditors shall also be elected at the Annual Meeting who are not members of the Executive Committee.
8. Special meetings of the Association may be held at any time upon call of the President, by written notice mailed to each member at least five days before the meeting.
9. Special meetings shall also be called by the President whenever required to do so in writing, by one-fifth or more in numbers of the members of the Association.
10. At any meeting of the Association, 15% in number of the members shall constitute a quorum for the transaction of business.
11. The officers of the Association shall consist of a President, a Vice-President, who shall be chosen by the Executive Committee from among themselves, at the first board meeting after the annual meeting. The Manager and Secretary-Treasurer may be chosen by the Executive Committee from among themselves. Special meetings of the Executive Committee may be held at such times and places as they may select.
12. The President, or in his absence, the Vice-President shall preside at all meetings of the Association. In the absence of both, a chairman shall be chosen from the members present.
13. The Manager and Secretary-Treasurer for the Association shall have charge of the business in detail, but cannot close any dealings unless authorized to do so by the Executive Committee.

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14. It shall be the duty of each member to prune and fertilize; he also shall spray three times each season with the formula, and at such times as recommended by the Manager of the Association.

15. All good barreling apples grown by members of the Association (excepting for their own use) are to be handled by the Executive Committee, and any member disposing of his or her own apples shall pay to the Association the sum of 50c. per barrel.

16. All Apples are to be packed in accordance with the grade adopted by the Executive Committee.

17. Each member shall pay for the head packer who is sent to his or her place to oversee and assist in the packing, while packing their fruit.

18. The books of the Association shall be audited before the date of the annual meeting in each year, and the report of the receipts and disbursements, properly signed, shall be read at such annual meeting. The members may order a special audit of the books to be made at any time and the auditor shall report thereon without unnecessary delay.

19. When from any cause a vacancy occurs in any of the offices of the Association, it shall be filled by the Executive Committee at their next meeting. Absence without leave from three consecutive meetings of the Executive Committee shall create a vacancy.

20. The Manager and Secretary-Treasurer shall be employed to look after the interests of the Members of the Norfolk Fruit Growers Association in getting quotations on barrels and spraying material; and show the members how to prune, spray, cultivate, fertilize, pick and pack their orchards to the best of their ability; also to give spraying and packing demonstrations.

He is also to look after the services of good packers and have one at each orchard while packing the fruit,—the expense of the packer to be paid by grower while packing at his or her place.

He also is to look up the best markets for selling the fruit. He agrees also to ship the fruit and look after collections, but cannot close any deal in buying, selling or dividing money, without consent of the majority of the Executive Committee. He also does the managing Secretary-Treasurer's work.

For this work the Executive Committee is to pay him twenty cents per barrel out of the proceeds of each member's apples.

21. Every dispute between members, and the Association, or any person claiming through or under a member, or under the rules of the Association, and the Executive Committee, Treasurer, or other officers thereof, shall be decided by arbitration in the manner following:—The party complaining shall make a statement in writing of the matter complained of or in dispute, and shall therein name the person he appoints as arbitrator, and shall place such statement in the hands of the Secretary of the Association. Within ten days of the receipt of such statement the President shall name a second arbitrator, unless he is a party to the dispute, in which case the Executive Committee will appoint the second arbitrator. The two arbitrators will meet and appoint a third arbitrator, and the arbitrators so appointed shall meet without unnecessary delay and hear and determine the matter in dispute, and file an award with the Secretary of the Association, which award if signed by at least two of the arbitrators, shall be binding and conclusive on all parties without appeal. Nothing herein contained shall be construed to prevent both parties agreeing upon one arbitrator, whose decision in such case would be final. All arbitrators appointed under this section must be members of the Association.

22. The Secretary-Treasurer shall keep a record of the proceedings of all meetings of the Association, or its Executive Committee, and of all receipts and disbursements, and he shall report the condition of the finances annually, or as often as the Executive Committee shall desire. He shall also attend to the correspondence of the Association and keep the same on file.

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23. These rules may be amended at any regular or special meeting by a vote of the members present. Notice of any proposed amendment must be given each member by letter or otherwise at least five days previous to the meeting.

WHY CO-OPERATION IS NOT MORE SUCCESSFUL AMONG FARMERS.

The key to the great future success with our farmers lies in true systematic co-operation. It is just as necessary for farmers to join together for their mutual benefit as it is for any other body of people in the world, and nearly everybody else is working in co-operation with others of like occupation. It is necessary to organize, to have written by-laws, and to elect the most interested growers as officers of the organization. The best business manager obtainable should be engaged, the manager may not necessarily be one of the members.

It is regrettable that farmers' organizations up to the present time have not been more successful, and we must profit by the mistakes that have been made. There are several reasons why farmers' organizations have not been more successful, the chief of which I will explain to you.

(1) Because, as a class, farmers, up to the present time, have not learned the necessity of running their farms strictly upon business principles, as is customary for a business-man to run his business. The farmer's duty, as he sees it is to till the soil, grow and harvest the hay, grain and other products and take care of the stock, sell all above what he requires for his own use for cash, and with the cash purchase necessities and try to put aside a little cash each year in the bank. Usually he does not keep any other book than the bank pass book furnished to him by the bank. Business men, as a class, do not run their business in this way. They have learned that it is necessary to keep books, and in these books to have accounts of every branch of their business, so that they are able to determine their profits in each department. Some farmers keep accurate books for their farm. Such ones find it a pleasure to do their farming in this business-like way and are good organizers of farmers' co-operative associations, and if members were all of this type as far as the membership is concerned it would without a doubt be quite satisfactory.

(2) We should as farmers try and educate ourselves as to business methods, and we will then learn that farm books are necessary to insure success.

(3) Jealousy on the part of individual members, generally caused by suspicion.

(4) Farmers are more self-supporting than any other occupation, and this has given them considerable independence, but they have been accustomed to managing their own affairs, and not paying large profits, salaries or commissions to any one if they know it, and what are considered large profits by the farmers are looked upon as small profits by the business man. Therefore, when farmers go into business co-operatively very often they look for a manager who will work for the least money rather than one of experience. I know of several instances where men have accepted positions of manager of an association at a lower rate of commission or salary than he knew he could afford to take, but in order to get a Fruit Growers' Association started he accepted the position to the detriment of both association and himself. The manager soon finds that the fruit business is not one of pleasure and when he demands more pay there is always some one in the association who is willing to do it at the same old price, which causes a change in the management. A manager's position is a hard one, far harder than that of a general in an army, as the general only has his own army to look after, but the manager of a Fruit Growers' Association has his own army to look after also the enemy, as some farmers rather erroneously term the apple buyer. A successful manager will get the growers and the apple buyers upon a better understanding of each other, and make it a pleasure for them to do business with each other to their mutual benefit. Apple buyers and growers are both working at the present time to their disadvantage by not working co-operatively with one another.

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(5) The lack of education along co-operative lines, and the necessary experience in the purchasing of supplies, and the growing and the packing of the very best quality of apples.

(6) The packing of apples very often is very unsatisfactory. We should try as far as possible to have each member's apples packed in his presence, so that each can see for himself the quantity of No. 1, No. 2 and cull apples, that come out of his orchard.

(7) The farmers have been in the habit of receiving cash for their apples when delivered at the railway station, and they like to receive the cash soon after making delivery, so my advice would be to sell in the fall of the year at packing time and make contracts, so that you can settle with your growers as soon as possible.

(8) All apples should be pro-rated, according to varieties and classes, so that every grower will get his full value for his orchard. For instance, Northern Spy and Kings are worth more than Ben Davis or Pewaukees. It would well pay some of our co-operative associations to have their manager take a trip to Hood River, Oregon, or Grand Junction, Colorado, and visit the co-operative associations there and learn their business system of co-operatively handling their apples. Also visit the large receiving markets and learn what pack is most desirable. The reason co-operation is more successful in the Western States than it is here in the East is because the co-operative associations there are made up of members who are business and professional men.

(9) We do not give enough attention and consideration to our home markets.

(10) Each and every member and officer of the association should not only keep the printed by-laws of the association to the letter but should also enter into the true spirit of co-operation by keeping the following unwritten by-laws.

(a) The object of this association shall be bringing together several minds united in one idea.

(b) Speak kindly, be true and do right.

(c) All should agree to do all we can towards growing the very best apples and use as much care in the growing, packing and grading of our apples as do the California Co-operative Orange Growers' Associations in regard to their oranges.

(d) We are in this business for our mutual benefit. We, however, expect losses as well as gains, but we will stand together.

(e) Do unto others as you would like them to do unto you.

(f) We must not be selfish or have suspicion of one another, but everything that is done should be done for the good of the whole association and not for the good of any individual member.

The secret of success for every association will be in the quality of fruit produced and the packing of same, in the most careful manner in desirable packages. I will deal first with the uncared for orchards, owned by many members of our association, the first year they join.

Pruning is the first thought to be considered, which is generally done as early in the spring as possible and should be done in a most systematic way. Do not go to a thirty year old tree and prune same by cutting off a half dozen of the large limbs of the tree and call same pruned. Begin at the bottom of a tree by standing on a step ladder and work around the tree, thinning out the small branches with the saw and the hand pruning shears. It is quite necessary that the lower limbs are thinned quite severely the first year you prune a thirty year old uncared for orchard, then by the use of a 20 or 22 foot ladder thin out the balance of the small branches and be careful and not thin the top too severely where the 22 foot ladder will reach to the top, and if it does not reach to the top I would advise cutting back so you can reach any limb in the tree with a 22 foot ladder and paint all large wounds made in the top of the tree. Always use a fine tooth saw and do not leave any stubs, cutting close to the other limb where the wound is made, the limb left will carry the sap by the wound

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causing a complete healing where the cut has been properly made. Always cut all dead wood out of the tree. A properly pruned tree renders spraying more effective.

Fertilizing.—It is just as necessary that a tree should be properly fed to produce fruit as it is to feed an animal to produce fat. Barnyard manure has been used more extensively than any other fertilizer, which should be put on in the winter or the early spring. We have a lot to learn as to the value of commercial fertilizers.

Cultivation.—Ploughing should be done as early in the spring as possible, not when the owner is ready, but as soon as the frost will permit, and the working of the soil should follow, and continued in Southern Ontario until 10th to 15th of June. The date to stop cultivation will depend on climatic conditions and location. The aim should be to cultivate to a period that will bring the harvest with matured fruit in plenty of time before severe freezing weather.

Cover crop.—This again depends on location. In Southern Ontario I would recommend the sowing of half a bushel of buckwheat to the acre at the time of the last cultivation. Constant sowing of clover crop is apt to make poor coloured fruit.

Spraying.—No part of the care for orchard work is more unsettled than that of spraying. This is especially due to the large number of manufacturers who are preparing spray mixtures, all of whom have according to their advertisements the *best*. My opinion is that both the growers and the manufacturers will all see nearer alike within the next five years.

SPRAYS FOR APPLE TREES.

The members of the Norfolk Fruit Growers' Association will for 1911 principally all use the following spray card for apples:—

First spray when buds begin to swell with lime sulphur 32 degrees baume or 1.2831 specific gravity. Test and dilute to 8 parts water and one part concentrated lime sulphur. In diluting, when trees are dormant divide the baume test by four.

The growers who wish to prepare their own concentrated lime sulphur should write to L. Caesar, B.A., B.S.A., Department of Entomology, Ontario Agricultural College, Guelph.

Second spraying.—Just before fruit buds break open, with bordeaux mixture, consisting of 16 lbs. blue vitriol, 1 lb. paris green, 12 oz. white arsenic and 2½ lbs. sal soda (prepared as below) 70 lbs. lime, 200 gallons water.

Third spraying.—(Very important.) Just as quickly as blossoms fall, with 12 lbs. blue vitriol, 1 lb. paris green, 12 oz. white arsenic 2½ lbs. sal soda (prepared as below) 70 lbs. lime 200 gallons water.

Fourth spraying.—If troubled with Tussock Moth, when the young begin to feed on the new foliage, with same formula as third spray.

Always use 10 lbs. water to the gallon. We also prefer to use granular blue vitriol, as it dissolves easier. Also get a high grade lime.

Always prepare the arsenic by boiling 12 ozs. arsenic with 2½ lbs. sal soda in 2 gallons water for 45 minutes; if you have a kettle large enough you can make up a stock solution. Keep this kettle away from stock as it is poison. Also, do not boil where stock may be running, as if any boils over on the ground, the stock will eat the earth and it will poison them.

We will now make up 200 gallons for 2nd spraying; Put 16 lbs vitriol in a hopper with Burlap bottom, which place over the hole in your tank, pump or pour 150 gallons of water on this vitriol straining in the tank. Then slack 70 lbs. good lump lime (none air-slacked) in 50 gallons of water and strain through a hopper with a wire bottom into 150 gallons already in the tank. Then add of your boiled arsenic solution an amount equivalent to 12 ozs. White Arsenic and 2½ lbs. sal soda. Then add one pound paris green by dissolving in a small pail of water. Each time in adding lime

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arsenic and paris green agitate thoroughly. Now you are ready for the orchard and keep well agitated and a good pressure. Always clean out lime box with water every time after using. Always pump some clean water through your pump, nozzles, &c., every night when in use and keep tank well cleaned out.

A great many of our orchardists in Ontario will this year use concentrated lime sulphur and arsenate of lead for second, third and fourth spraying. Good result was obtained last year by using this formula, prepared as follows:—With foliage on the tree concentrated lime sulphur giving a 32 degree Baume test dilute 32 part water and 1 part concentrated lime sulphur, adding 3 lbs. of arsenate of lead to each 50 gallons of the mixture. Some also add five pounds lime to 50 gallons of mixture. If Baume test is 33 dilute 33 parts water 1 part lime sulphur. In other words divide Baume test by one when the trees are in leaf. It is very necessary that you have a hydrometer showing that Baume and specific gravity test if you use lime sulphur.

Thinning of apples.—This should begin not later than the last week in July. All heavy loaded trees should certainly be thinned and the better the thinning is done, the better will be the quality and better the price: besides, it is not such a heavy burden on the tree. A small apple has just as many seeds as a large apple, and it is the seeds in the apple that take the large amount of plant food.

THE CARE OF A YOUNG APPLE ORCHARD.

First: Location and soil.—A good orchard soil possesses at least three strong characteristics: good water drainage; good texture and plenty of plant food.

Preparation of the soil.—Before starting to plant, the soil should be deeply ploughed and thoroughly cultivated.

Purchasing of Nursery Stock.—Other things being equal, it is best to buy from the nearest nursery as the stock is usually acclimated and better adapted to the location than stock grown under different conditions. Buy only the very best from reliable nurserymen; second class stock and culls are dear at any price and should never be planted; diseased, stunted or injured trees rarely if ever develop into a first-class tree.

Distance apart to set.—33 feet apart is customary in Southern Ontario for winter varieties of apples. My own orchard is planted for permanent varieties 40 feet apart, and in the centre of each square is a filler apple tree giving 54 apple trees to the acre, and then I have a peach tree placed between each apple tree, giving me 54 peach trees to the acre. The marking of your orchard is best done, if your field is fairly level, by the use of a No. 12 galvanized iron wire; first with a square, two boards and stakes; square your field then stretch your wire with even pressure with stakes at each end, drive slanting or pulley and block across the field, then get a coil of small brass wire and wire pinchers. If you are planting your trees 33 feet apart, wind firmly around the No. 12 galvanized wire at about 12 feet from the end four or five rounds of this small brass wire, pinch down firmly and put on some white lead so it will not slip. Repeat this every 33 feet across the field (use a steel tape or measuring stock for measuring), leave two or three days to dry well, then place a few cross sticks over this wire so it will not get out of line, and you are ready for the digging of the holes, so the wire knot will come in the centre of each hole, then place your tree so the trunk is against the knot, slant the tree to the west (owing to prevailing winds) and work rich top soil well around the roots and tramp in firmly. Always prune all bruised roots, leaving a smooth cut. Now you are ready to prune the tree.

The building of an apple tree should begin when the tree is first set. Give the tree the proper shape you want it to grow and cut back at least one third of all branches. All trees should be pruned each year, in order to shape them properly and not grow any waste wood. It is also necessary that these trees should be sprayed each year while the trees are dormant, with lime sulphur.

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I have had good results in growing strawberries and potatoes between my trees. Many of my three year old filler peach trees last season produced one bushel of peaches. I also marketed 98,000 baskets of strawberries and 4,000 bushels of potatoes last season, grown between my trees.

Many old and neglected orchards can by systematic and well directed work be gotten into good condition, but they can never be made to acquire as high a standard of excellence as if they had been well cared for throughout their entire period of development.

Every individual tree requires treatment differing from that of its neighbour. This difference, however, is of no consequence to the experienced pruner, as he knows how much each should be treated. The Northern Spy required more pruning than the Baldwin or Greening, and the King requires very little.

THE CHAIRMAN.—The work that has been done by the Norfolk Fruit Growers' Association has been of such practical value, and of such great value, that it is too bad that the country at large is not in possession of all that has been accomplished. If this information is spread broadcast throughout the land, the practical results that have been obtained—and the evidence we have listened to this morning confirms that idea—would be extended. If we could distribute this information to the public generally it would prove of great value to the apple industry. The Government sent demonstrators to the County of Oxford some five or six years ago to do experimental work in spraying, and as a result of that work an association has been started at Burgessville, which is doing work to this day, while there is another association at Hatchley which is doing excellent work. Then there is Mr. J. C. Harris at Ingersoll who started spraying ten or fifteen years ago, and I had him attend Farmers' Institute meetings to tell them what he was doing. The farmers were skeptical and very few had faith in what he was accomplishing. But he is running orchards and carrying on the business in a much larger way than ever. Now, the work Mr. Johnson's Association is doing is perhaps larger and more outstanding than the work of those other associations. It is a work along the line of practical demonstration to the farmers of this country. I think we would have the difficulties of inspection almost entirely solved, if we could get a high grade quality of fruit.

I have very much pleasure in tendering you, Mr. Johnson, the thanks of this committee for your attendance before us.

Mr. JOHNSON.—I only wish to thank you for this most hearty vote of thanks.
Committee adjourned.

Certified correct,
JAS. E. JOHNSON.

COLD STORAGE FOR APPLES AND OTHER FRUITS

HOUSE OF COMMONS,

COMMITTEE ROOM, No. 34,

WEDNESDAY, March 8, 1911.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock a.m., the Chairman, Mr. Schell, presiding.

The CHAIRMAN.—You have noticed from the Order Paper that Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, Department of Agriculture, will address us this morning on 'Cold Storage for Apples and other Fruit; The results of some experiments and trial shipments.' Cold storage is one of the questions that is agitating the mind of the public perhaps more to-day than ever, and we are glad that Mr. Ruddick will have some valuable information to give us in the matter of caring for fruit in cold storage. I believe he has some samples of fruit here and by means of it will be able to convey some idea of the benefits that have resulted from caring for fruit in cold storage. I have very great pleasure in now calling upon Mr. Ruddick to address you.

Mr. J. A. RUDDICK.—Mr. Chairman and Gentlemen:—The Branch of the Department of Agriculture over which I have charge covers several different lines of work, but I am here this morning, as you understand, to give you some evidence as to what we have been doing in relation to the cold storage of fruit. We have been getting some experience along that line during recent years and in various ways: In the first place we have, through our system of refrigerator car and cargo inspection, and the supervision of the export of fruit in cold storage, a succession of reports from Montreal and ports in Great Britain respecting the condition of fruit arriving under different systems of transportation. We are able to draw some conclusions from these records. We have also been conducting some commercial experiments—I would call them that rather than scientific experiments—in the cold storage of apples and some other fruits, and these I shall bring to your notice later on.

APPLES FOR INTERNATIONAL EXHIBITIONS.

During the last three or four years it has fallen to my lot to make the collections of apples for the various International Exhibitions at which Canada has been represented. We buy the apples in the fall and keep them in cold storage, and we know by the way in which they turn out during the following summer, as to what varieties give the best results in cold storage, and the effect of different kinds of treatment on the keeping of apples. Some of these points I expect to bring out in the course of my evidence.

I would ask your permission then to present this subject to you in the following order: First, the cold storage of apples; second, the cold storage of grapes; and third, the result of some trial shipments of peaches to Great Britain.

By Mr. Owen:

Q. Will you tell us at what temperature you keep your cold storage for apples?

A. Yes, I will give that information later if I may.

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THE COLD STORAGE OF APPLES.

Now, cold storage may be applied to the apple industry in two or three ways: In the first place it is useful for the cooling of the early varieties for immediate shipment. Then it is also useful for the preservation of the later or winter varieties which may be kept for several months; and it has a further use in extending the season for certain special varieties. The earliest varieties are not wanted for long keeping; it is not advisable to try to keep them.

By Mr. Wilson (Lennox and Addington):

Q. Will you tell us in your address how long apples can be kept?

A. Yes, I will do that. It is inadvisable to try to keep the earliest varieties into the season for other later and superior varieties. Then it is important to get the apples out promptly to secure the early market. These early apples ripen rapidly; that is the reason they are early apples, because their life processes are short and proceed much more rapidly than in the later varieties. That means that the early variety ripens as much in a day as some of the later varieties will in a week or even a fortnight, and perhaps even more than that. A day or even a few hours at high temperature makes a great difference. It is of the very greatest advantage then to be able to chill these early apples before shipment. They will carry very much better, because being firmer and harder when chilled they do not bruise so readily, and they will reach the consumer in much better condition and with less waste. That is the only way in which we need cold storage for apples of this class.

BOXES VS. BARRELS IN COLD STORAGE.

Then the box or the package is of some importance in this connection, because apples packed in boxes may be cooled very much more quickly than if they are put in barrels. If you pack apples in barrels during warm weather when the ripening process is proceeding rapidly there is a great deal of heat generated in the apple itself, and in a tight package like a barrel the heat is confined. The high temperature continues the ripening process and the ripening process generates more heat and the apples deteriorate very rapidly under those conditions. But in a box which is more or less open, the heat escapes, the cooling is effected more rapidly, and there is not the same amount of deterioration in a given time. I have seen experiments reported with early varieties of apples that had been placed in a constant temperature for several days and then when a thermometer was pushed into one of those apples the temperature was found to be as much as two degrees higher than the constant temperature in which they are stored. That is the heat generated by the ripening processes. Chemists tell us that they can by analysis determine exactly how many heat units have been generated in the ripening process.

By Mr. Best:

Q. Will you tell us if there is much difference in the flavour of an apple that is fairly ripe and one that is picked a little green?

A. Generally speaking the more matured apple has the better flavour, and there is this to be said: that the fairly well matured apple, which of course is not over-ripe, will keep longer and better in cold storage than a green one will. That I know is contrary to the opinion that is held by a great many people. An apple ripens more rapidly after it is picked than it does on the tree.

Q. Will that apply to all kinds of apples?

A. To all kinds of apples.

Q. And to all kinds of fruit?

A. Yes, up to a certain stage. Of course you must not allow the fruit to get over-ripe.

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THE IMPORTANCE OF QUICK COOLING.

Now, I want to give you one illustration as to the advantage of the quick cooling of these early varieties. You have all heard of the famous Gravenstein apple as grown in Nova Scotia. It grows, of course, in other districts of Canada, but it grows particularly well in some parts of Nova Scotia, and I think the reputation of Nova Scotian apples has been made as much by the Gravenstein as by any other. In 1909 a very large percentage of the Gravenstein apples arrived on the market in a wasty, unsatisfactory condition. It was warm weather at the time of packing, and there were other peculiarities of the season which contributed to the condition in which they arrived on the market. They were put in barrels in a fast ripening condition and shipped to the Old Country and to other markets, and arrived very much out of condition, and there was a great deal of loss as a result. Last fall, as a part of a representative exhibit from the different provinces at the National Apple Show which was held at Vancouver, I arranged with some of the fruit growers in Nova Scotia to prepare some half dozen boxes of Gravensteins, along with other varieties, and send them to Ottawa as soon as they were picked. They were then put in cold storage here and shipped to Vancouver on the 22nd of October by express, just in an ordinary express car, which was warm of course. Those apples were on exhibition in Vancouver until the 5th of November when they were returned to Ottawa. They were in good condition for three weeks after they reached this city. Every apple in the box was sound and in good condition. That was a very much more severe test than they are subjected to when placed on the market in the ordinary way, and shows the value of prompt cooling. Provision for cooling the Gravenstein, as well as other choice early varieties, would add greatly to the profits in growing or handling them, and tend to still further enhance their reputation.

Now as to the cold storage for later varieties. If I were asked why I think cold storage is useful in handling late fall or winter varieties I would put the case something like this: A large percentage of all apples become more or less wasty and over-ripe before they reach the consumer. Now, that is partly the result of injuries which the apples receive in the picking and handling, and it is partly because they are held for a few weeks at too high a temperature. Even our latest varieties are exposed to temperatures which are not sufficiently low to check these life processes in time, and in consequence a large percentage of the apples become over-ripe and wasty before they reach the limit of their season—the season that they may be expected to be good in.

COLD STORAGE WILL NOT PREVENT ALL WASTE.

Cold storage will not prevent all this waste, not by any means, and I do not want any one to get that impression from anything I may say, because I think there is really as much room for improvement in the handling of apples so as to prevent bruises and skin punctures of one kind and another, as there is in the application of cold storage. If you have your apples perfect, sound in the skin, with no bruises and no punctures of any kind so that the moulds cannot find entrance, winter varieties will keep a long time even without cold storage; but with the aid of cold storage you can extend their season, and those which are not quite so perfect will be preserved in better condition. We notice that apples keep very much better some seasons than they do in others. I am speaking now of the winter varieties. In 1909 it was found that the Northern Spy, which is one of our prominent varieties, as you know, kept very badly, it turned out badly early in the season. There was reason for that and I think it was simply this: that at the time of harvesting and after the apples were packed, while they were still in the barrels lying round, the weather was unusually warm, and that meant of course that there was a very rapid deterioration. Now, if these apples could have been chilled, and without any delay, at the time they were harvested, it would have meant a considerable saving to the apple growers and

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dealers, many of whom suffered great losses in that year, and the warm weather would have been an advantage rather than a detriment.

By Mr. Wilson (Lennox and Addington):

Q. Could the farmer do that?

A. Of course he could.

Q. It is not easy for the individual farmer to provide himself with a good cold storage warehouse.

A. No, but it is quite possible for the individual fruit grower to have small ice storages. If I were a fruit grower or was handling apples or tender fruits, I should certainly provide a place of that kind. Of course I think the ideal way would be to have these apples removed at once from the orchards to the cold storage warehouses. In the state of New York—where they need cold storage a little more than we do because their season is somewhat earlier in some districts—along the Falls Branch of the New York Central Railroad from the Bridge to Rochester, you will find every little village has one or more big cold storage warehouses for apples. The fruit is taken right from the orchards into these places and stored there. These apples are mostly for the home trade and they are kept in storage until they are required.

By Mr. Thornton:

Q. The only effectual way to handle apples would be to reduce them to the right temperature before they are placed in the barrel?

A. I do not think it is not practicable to do that.

Q. There is heat in the barrels and the cooling would occupy some considerable time.

A. Not if the temperature is low enough. However, as I have already said, apples will cool very much quicker in boxes than they will in barrels, because the box is open and the air circulates very much more freely in a box than it does in a barrel. That is why tender early ripening varieties should be put in boxes as much as possible.

By Mr. Donnelly:

Q. Who erects and controls the cold storage warehouses that you spoke of in the state of New York?

A. I think they are mostly controlled by large firms who are dealing in apples, but there are quite a number of public cold storages.

Q. Those cold storages would be operated by private individuals and charges made for fruit placed therein?

A. Yes. The usual charge there is 40 cents a barrel, for the season, irrespective of the length of the storage period. The storages are operated only during the apple season.

By Mr. Wilson (Lennox and Addington):

Q. Do they use ice?

A. No, they have mechanical refrigeration in these places.

VENTILATION OF BARRELS.

By Mr. Wright:

Q. Would it be an advantage or a disadvantage to secure free circulation of air by having openings in the barrel?

A. That is a point which is very much discussed and there is something to be said on both sides. It would certainly facilitate the cooling of the apples in the barrel to have the barrel ventilated by making openings in it. That would be an advantage from the point of view of rapid cooling. On the other hand, when you

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take apples out of the cold storage into a warmer atmosphere it would be an advantage to have the package perfectly air tight, which prevents the air from coming into contact with the cooled fruit, and stops that condensation of moisture which takes place when there is a free circulation of air round it. On the whole I think the ordinary barrel will give the best satisfaction if put into cold storage as quickly as possible. Now, understand me, I would not advocate that all the apples grown in Canada should go into cold storage, that is not the intention at all, but it is necessary for those who want to keep a stock for late consumption, or to extend the season for special varieties. Now, while we are speaking of the storage of Northern Spies, I want to show you something which may be of some interest.

APPLES GROWN IN 1909.

These (exhibiting specimens) are not particularly fancy specimens of the Northern Spy, they are not very large, there is nothing special about them, but they are taken out of a commercial box which was grown in 1909 and are now 17 months old. They are taken from a lot of fruit placed in cold storage at London, within about 48 hours after being packed, and kept there at a temperature of about 32 degrees until last spring, and since that time they have been kept at 30 degrees.

By Mr. Owen:

Q. Do you vary the temperature for early and late varieties?

A. No, the lowest possible temperature without freezing the apples is the best. Of course if you are cooling apples for immediate shipment I would not advocate as low a temperature as that, because you would have some trouble with the moisture condensing on them when you take them out. A temperature of between 40 and 50 degrees is sufficient to check the ripening of the early apples. That will make a great improvement as compared with 70 and sometimes 80 degrees, as often prevails during the harvesting.

Now these apples (referring to 1909 Spies) are perfect in appearance, and you can see they are quite firm and crisp though nearly a year and a half old. There was some waste in the box, but in every case the rotten apple had received some injury.

Q. At what temperature were these apples kept in storage?

A. At 32 for the first 6 months, and after that at 30 degrees.

Q. They would have kept just as well at 32 as they did at 30?

A. No, I think 30 is the better temperature, but it requires great care to operate with such a narrow margin of safety. I want to call your attention to this point for long keeping. You will notice that the specimens I have handed around are fairly well coloured and well matured. Now, here is a specimen (showing apple) which was poorly coloured when picked. You see it is now of a brown russet colour, or what is known as 'scalded.' This defect is much more common when the apples are immature or poorly coloured.

By Mr. Wilson (Lennox and Addington):

Q. The apples are not as good flavoured as others that have not been kept so long, are they?

A. The flavour of these 1909 apples is slightly musty, and it is not as good as it was a year ago. There were a few apples in the box that were rotten. The Northern Spy is particularly susceptible to the brown rot, which is caused by the growth of blue mould. If the skin is perfect the mould cannot do any harm, but if there is a break or a bruise, the mould enters and the apple decays. If you have it in perfect condition there are few apples that will keep better than the Spy.

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IMPORTANCE OF PROMPT STORAGE.

I want to give a little further emphasis to one point in connection with these experiments. Seven carloads of apples were purchased in the fall of 1909. One carload was grown in the county of Elgin, in Southern Ontario, and the others were procured in Ontario county. The Elgin county lot was placed in cold storage at London within three days after the apples were picked, the other lots were cold stored at Montreal and St. John, N.B., with the exception of one carload, which was stored in a frost proof warehouse at Oshawa. The Northern Spy apples which are shown here to-day are from a box belonging to the lot stored at London, and I would say that this box of apples is in nearly as good condition to-day as the Oshawa lots were a year ago. I attribute the difference partly to the fact that the Southern Ontario apples were more mature and better coloured, but the difference in the keeping quality was mostly due to the fact that the lots stored at Montreal and St. John were delayed for nearly three weeks from the time of packing until they were placed in cold storage. There was some difficulty about obtaining cars for shipment. I consider that these experiments would be worth while, if they did nothing else than to emphasize this point. I find it difficult to impress upon fruit growers and dealers the necessity of getting fruit into cool storage quickly.

When collecting apples for exhibition purposes I have had our packers send the boxes to cold storage every night, and where no cold storage was available, and the apples were to be shipped from the point where they were packed, we have ordered a refrigerator car, in which the boxes were placed as fast as the packing was finished. By keeping the car well iced the apples are soon cooled off.

APPLES FOR FESTIVAL OF EMPIRE.

We have on hand now about 1,200 boxes of apples comprising 26 varieties collected from all over Canada, which are intended for the Festival of the Empire Exhibition, which is to be held in London next summer. I think these are the finest lot of apples we have ever put up, and they should do the country a great deal of credit.

EXTENDING THE SEASON FOR CHOICE VARIETIES.

Now there is another important function of cold storage in connection with the apple trade, that is to extend the season for special varieties, and in this connection I will mention only four varieties, the Fameuse, the McIntosh Red and the Gravenstein—three of the finest dessert apples in the world, without any question—and another very choice apple, namely, the Greening, which is particularly an Ontario apple. Now the Greening is one of the most useful varieties grown in Canada. It is not very attractive in appearance and it is not popular in some markets on account of its rather dull green colour, but it is an excellent cooking apple and it is also a good dessert apple. There is no apple for which the season has been extended so successfully as in the case of the Greening. This has been demonstrated very fully in New York and other eastern states, where they have extended its season two and three months with success in every respect. You cannot do that safely with many varieties, which lack some peculiar quality to make them popular. Greening has quality which carries it in competition with the other varieties at any time. It should be well matured, showing a slight blush, otherwise it is apt to scald. The usual season for the Greening is December to February. In this lot of apples, cold stored in 1909, there were some 200 boxes of Greenings which were shipped to Calgary, and they gave the best of satisfaction in the month of May.

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By Mr. Thornton:

Q. Were they packed in boxes from the time they were picked off the trees?

A. Yes.

Q. They never were in barrels?

A. No, and they were not re-packed either.

RE-PACKING NOT NECESSARY.

That is a point which we must not overlook. It is the common practice when apples are to be held for winter shipment to pack them temporarily, in the orchards, and to re-pack in the warehouse just before shipment. The re-packing can be saved if the apples are cold stored and more care is given to the original packing. We did not find it necessary to re-pack any of these cold storage apples. A thin pad or liner was put under the head of each barrel before final shipment.

Q. A paper liner?

A. There were two layers of paper with a little excelsior between, which made the pad about a quarter of an inch thick.

By Mr. Owen:

Q. You supervised the packing of them yourself?

A. No, not in all cases; in some cases we had men on the spot but in other cases we merely specified they should be well packed.

Q. They were packed a little better than ordinarily?

A. Undoubtedly, because when they are packing with the intention of re-packing they are not very careful. The result of re-packing these matured apples, because they are usually quite matured at that time, is that every apple is bruised more or less, in the operation, and when they are turned out in the old country, or anywhere else, you can hardly find one that is not so injured; that detracts from the appearance and the value in every way. If the cost of re-packing can be saved and the apples preserved in better condition it seems to be worth while.

APPLES SHOULD BE WRAPPED IN PAPER.

Q. Do you wrap each apple?

A. We wrapped the apples that were put in boxes and that is advisable, too, not only for the appearance, but paper helps to keep them tight. If an odd apple rots the wrapper confines the spores of the mould to some extent, at least, so that the others are not so much affected as they would be if unwrapped.

Q. Do you put pressure on the apples when packing?

A. Just enough to keep them snug, that is all, not enough to bruise the apple.

MCINTOSH RED AND FAMEUSE.

Now, I spoke of the McIntosh Red and the Fameuse, and I have some of those varieties here. I want to show you a Fameuse (exhibiting specimen) which is now two months past its regular season, but still in fine condition.

Q. Is this an 1909 apple?

A. Oh, no, that is last fall apple. Here is another specimen. Some of these are from Ontario and some from Quebec.

By Mr. Savoie:

Q. What apple is this?

A. Fameuse.

Q. Of last fall's growth?

A. Yes, last fall, it came from down near Como, I think

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These (exhibiting specimens) are the McIntosh Red. They are firm and crisp and will be in good condition for a long time yet, although fully a month or six weeks past their regular season. There is no difficulty at all about preserving these choice dessert apples all through the winter, although they are usually done in the months of December and January.

By Mr. Thornton:

Q. What is it you call this apple, we would call it a Snow apple?

A. That is the Fameuse.

Q. They would pass for a Snow apple with us.

A. It is a different name for the same apple. It is called Snow in Ontario, and Fameuse in Quebec where it originated.

APPLES DAMAGED IN THE ORCHARDS AFTER PACKING.

By Mr. Best:

Q. Is it not a fact that a great many apples are spoilt in the orchards by being allowed to lie there too long?

A. Yes, there is no doubt about that.

Q. It is quite easy to have them covered and protected from the sun instead of allowing them to be exposed to it?

A. That would be an advantage.

Q. I have found that the apples on one side of the barrel would be very much more ripened than the other, and that it was owing to that side being exposed to the sun.

A. Very probably.

By Mr. Owen:

Q. What effect would the rain have on the apples when lying exposed in the orchard?

A. I do not think dampness or moisture would have any detrimental effect, unless it would be to encourage the growth of mould inside the packages.

By Mr. Thornton:

Q. Who is responsible for the delay in getting the apples out of the orchard?

A. I do not blame the delay on any one in particular, because I understand that under our present system of marketing a great deal of it has been unavoidable.

Q. I have seen the apples lying for four weeks in the orchards after having been put in the barrels.

A. Apples allowed to lie in that way will certainly deteriorate more than those which are put into a cool warehouse, there is no doubt about that.

COLD STORAGE FOR GRAPES.

Now, with regard to the grape industry, those of you who know anything about fruit growing in the Niagara District know that the grape is one of the most reliable crops that the fruit grower has. It is never a very big money maker, but it is reliable and it is a very important crop. A very large crop of grapes usually results under present conditions in a glutted market, as there was in 1909. Now, I believe that some special varieties, some of those which have good firm skins can be held in cold storage for several months, and the season for grapes can thereby be extended very considerably. One reason why I make that statement is because I have here a basket of grapes grown last fall, which, as you can see, although they are past their best, are still in good condition. This is just a commercial basket taken from a lot of 25 baskets. I simply ordered them by letter from one of the growers, and had

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them shipped to the London cold storage where they were placed in a temperature of 37°, at which they have been held ever since. It is only a preliminary experiment, because there are a good many things we have yet to learn about the cold storage of grapes; we are not sure what is the best temperature at which to keep them or how the grapes should be handled before they are put in cold storage. We have yet many things to learn in this connection. You may find on testing them that some of these grapes are a little off in flavour.

By Mr. Owen:

Q. They taste very good; what variety are they?

A. One of the Rogers Hybrids, I think it is No. 4, known as the Wilder.

Q. How long have they been in cold storage?

A. Since October. I hope that in another year, with the completion of the cold storage warehouse in Hamilton, we will have some facilities for carrying on extensive experiments in connection with the storage of these more tender fruits, which have to be put into store very promptly after they are harvested. The specimens which I have here, you understand, had to be shipped to London, and while they have been very accommodating there in giving me every facility they have, they are not specially equipped for experimental work. I hope to be able to do something more on that line; I think it will be quite possible to keep many of these firmer varieties of grapes throughout the winter. You can easily see if that can be done how it will extend the market and relieve the glut at the time they are harvested.

By Mr. Sealey:

Q. Before you leave the grape question, I would like to call your attention to this very fine bunch of grapes which you have handed around for inspection. It is true that it is not perhaps quite as large or as nice in appearance as those we see imported from Great Britain and sold at 90 cents per pound or \$2 a bunch. I would like to ask you whether any effort has been made to substitute Canadian grapes of the fine quality you have exhibited here to-day for those imported from the old country, or to substitute them for the California grape which comes into the Canadian market packed in sawdust all the winter? I think something might be done in that direction as it is rather a pity that the people of Canada are paying away their money for these hot house grapes, giving tenfold for them what they would pay for the Canadian grape.

A. I do not think the Canadian grown grape will compete very well with the hot-house grape which is imported from Great Britain, and which is really in a different class altogether. You know that English people will hardly eat our grapes.

Q. On the other hand, do not our Canadian people cultivate a taste for the English grape, have they not to cultivate a taste for them before they like them?

A. I did not have to cultivate a taste for them, I never had any difficulty at all in that regard.

By Mr. Wilson (Lennox and Addington):

Q. The hothouse grape can be grown in this country, can it not?

A. Oh yes, there would be no trouble about that.

By Mr. Sealey:

Q. I notice that each bunch has attached to it a small section of the wood, does that cause any injury to the vine?

A. No, it will be pruned off in any case, and it is quite an advantage to leave a bit of the vine attached to each branch, because they do not dry out so much.

By Mr. Best:

Q. Would these grapes keep as well in an ice warehouse as in a mechanical refrigerator?

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A. It is all a question of temperature, but I do not think the temperature with ice storage can be made low enough to keep them that length of time. Of course, we do not know what is the best temperature for keeping grapes. There has been very little work done in the cold storage of grapes. If I had the facilities, I would be able to determine the different temperatures under different conditions.

By Mr. Sealey:

Q. If to a moderate extent our grapes could be made a substitute for the imported grapes at dinners at this season of the year it would be an advantage?

A. I do not see any reason why these grapes, if properly put away and kept should not be used for that purpose to some extent. No doubt they would not take the place altogether of the imported grapes, but they might do so to a considerable extent. I believe there is an opportunity to improve the grape industry along this line.

By Mr. Owen:

Q. In what temperature were these kept?

A. These grapes were kept in a temperature of 37°.

TRIAL SHIPMENTS OF PEACHES.

Coming to the peach shipments, we have to deal not so much with a question of cold storage as with one of packing and handling. At the same time, the peaches could never be exported without cold storage. In 1897 the Department of Agriculture undertook to make shipments of tender fruits to Great Britain, and shipped altogether seven thousand cases, including about 1,400 cases of peaches.

By Mr. Sealey:

Q. In what year?

A. In 1897. They were packed in large cases and the conditions were not as good as they might have been in some respects, with the result that the shipments were not altogether a success. Some landed in good condition, but a good many did not. However, I have no personal knowledge of these shipments, as I was not with the department at the time.

By Mr. Wilson (Lennox and Addington):

Q. Have you not tried it since that time?

A. I am coming to that. Since then we have shipped small lots of peaches to the different exhibitions—to the Franco-British Exhibition, and to some others which have been held in recent years—and they were landed in good condition and attracted considerable attention. During the last two or three years, the peach growers have been extending their acreage very rapidly, and they have come to realize that it would be necessary for them, in the very near future, to find a new market for a considerable quantity of peaches. It seemed to be advisable that some effort should be made to thoroughly test this matter of shipping peaches to Great Britain, and the minister authorized me to make some trial shipments. We took the matter up early in the season, corresponded with brokers on the other side, and with our own representatives, the Cargo Inspectors, with a view to deciding on the best style of package, and of determining as nearly as possible how many peaches it would be safe to send during the season. The result was that we made arrangements with the St. Catharines Cold Storage and Forwarding Company, Limited—because they had the only cold storage facilities in the Niagara District—to supply us with 2,000 cases of peaches to be packed as we directed, and they were packed like this (showing sample case). There were 20 or 23 peaches in each case, packed in aspen wood wool, which comes from Norway, and fills the bill to perfection.

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By Mr. Sealey:

Q. Is that package tight at the bottom?

A. No, it is slightly open at the edges. The top and bottom are a little narrow.

PRICE GUARANTEED TO GROWERS.

By Mr. Wilson (Lennox and Addington):

Q. In buying that quantity what did you pay?

A. I arranged to pay the growers the local market price at the canning factories, about $3\frac{1}{2}$ cents per pound, plus the cost of the package and the packing.

Q. What would they sell for in England?

A. They sold at an average of \$1.04 per case.

Q. What would that be per pound?

A. About 17 cents. They netted the growers at St. Catharines 80.7 cents per case, or about $13\frac{1}{2}$ cents per pound. I take some pride in the fact that we handled these peaches without costing the department a cent and gave the growers three times as much as we promised.

By Mr. Best:

Q. They sold at an average of what?

A. They sold at a price which varied from 3s. 6d. to 6s. 6d. per case, or on an average in our currency of \$1.04 per case.

By Mr. Thornton:

Q. That would be about four cents each? What did they retail for?

A. Six pence to eight pence, and in a few cases at one shilling each as English hothouse grown. The cost of shipping these peaches from St. Catharines to London, Liverpool and other markets was 23.3 cents per case. The freight from St. Catharines to Montreal was 4 cents per case and the ocean freight 9.6 cents, while the selling charges in Great Britain, including commission, were 9.7 cents per case, making a total of 23.3 cents per case, leaving an average net return f.o.b. cars St. Catharines of 80.7 cents per case. I may say, to judge from some of the account sales, that a few of these cases were used for advertising purposes, and there was consequently no return for them, but this is the net return for all the peaches shipped.

Q. That happens to be a cent per peach for transportation, commission and expenses?

A. Yes. Now, I want to make another reference to the shipments made in 1897, and to explain the difference between the results in the two years.

By Mr. Sealey:

Q. I suppose these went in ordinary cold storage?

A. They were shipped from St. Catharines in refrigerator cars and put in cold storage chambers on the ship at a temperature of about 36 degrees, and the temperature was allowed to rise a few hours before the chamber was opened, so as to prevent any condensation of moisture, which occurs after the sudden transfer from a low to a high temperature.

By Mr. Wright:

Q. After their arrival in England were they treated in the same way as ordinary shipments?

A. The shipments to London were taken to Convent Garden and sold at private sale by George Monro & Sons, Ltd.; the shipments to Liverpool were sold under the hammer, and also, I think, in Manchester, where we sent a small lot. The shipments to Glasgow and other points were all sold at private sale.

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By Mr. Russell:

Q. Which market brought the highest price?

A. The highest price was secured at Cardiff—6s. 6d. per case, but on the whole, London is the best market. We sent consignments to London, Bristol, Liverpool, Glasgow, Manchester, Leeds, Cardiff and Birmingham. Allow me to make a comparison between the shipments last year and the shipments of 1897. In the first place, in 1897, the peaches were packed in a large case holding about 50 pounds, and simply wrapped in paper.

IMPROVED TRANSPORTATION.

By Mr. Miller:

Q. That was in 1897?

A. Yes. They were evidently over-matured when they were picked and packed. We do not know what temperature they were carried at except that the reports of the ships show that they were carried at about 40 degrees, in some cases a little over that. But the most important point in my judgment was this—that in 1897 the average time from Grimsby to the ports in Great Britain was nineteen days. The average time of the shipments last year was twelve days, a difference of a week. There has been a great improvement in the transportation service in that time. In 1897 the railway service was such that you could not depend on getting a car through at any particular time. You had to allow considerable margin of time to be sure of getting through. Now, in all these shipments last year the railway companies gave us a timetable. We put the cars on a train at 6.30 p.m. and they were in Montreal the following night. The cars left St. Catharines at 6.30 on Wednesday evening and arrived in Montreal Thursday night, and were switched direct to the wharf and the peaches transferred direct to the steamer on Friday. They did that as regularly as clock-work.

By Mr. Thornton:

Q. The steamer went at what hour?

A. Saturday morning early. There were usually ten or twelve hours to spare in Montreal. There has been some difference of opinion among growers and shippers as to whether it was better to ship such fruit by express to Montreal and save a day, or whether it should be shipped by a refrigerator car. We think that we have demonstrated beyond any doubt that the refrigerator car was by far the safest plan, and it is worth something to have that point settled. There were private shipments made by express, and with the very first shipment there was an accident to the train and the peaches were delayed a day in the hot sun. If they had been in a refrigerator car, that would have made very little difference. The question of temperature is more important than the matter of one day saved in transportation.

By Mr. Wilson (Lennox and Addington):

Q. You told us you took twelve days. Was that from St. Catharines or across the Atlantic?

A. Twelve days from St. Catharines. That is the average. Some, of course, took more than that. The London boats are slower than the Bristol and Liverpool boats, which only take six or seven days to cross the ocean.

PRIVATE SHIPMENTS OF PEACHES.

There were some private shipments made last summer. Mr. C. A. Dobson, of Jordan Station, was the principal shipper, but the Biggs Fruit & Produce Co., Burlington, and Mr. D. Johnson, of Forest, sent small lots. Altogether there were 3,743 cases of peaches shipped from Canada to Great Britain last year, and I am

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glad to say that all were landed in good condition. I do not know anything about the returns from these private shipments, but I know that Mr. Dobson is preparing to ship again this year on a large scale, so that he is evidently satisfied with the returns he got.

These private shipments were made possible only through the arrangement entered into, by the authority of the minister, with the steamship companies, for the reservation of special fruit chambers, on which the department guaranteed the earnings. If shippers had to pay for the space of a whole chamber for comparatively small lots, the charges would be prohibitive. Our cargo inspectors watched these private shipments carefully, so that we were able to give the shippers much valuable information which they could not have obtained from any other source.

THE OUTLOOK FOR CANADIAN PEACHES IN GREAT BRITAIN.

Now, just a word or two as to the outlook for peaches in Great Britain, because that is important. Peaches in Great Britain have been looked upon as a luxury. I have seen them selling at 60 cents each; a shilling is about the usual price. I remember well in 1908, when I was travelling with the Scottish Agricultural Commission, we went to the Niagara district in the first days of September when the early St. John peaches were in good eating condition. We landed at St. Catharines in the morning, and the fruit growers met us with motor cars and took us through the peach orchards. 'Help yourselves, boys,' was the cry. It looked like the rankest extravagance to the Scotchmen. They could hardly realize it at first. One man said, 'I never ate a peach under a shilling in my life.'

By Mr. Sealey:

Q. In the early part of the season 60 cents and in the fall of the season 25 cents—that is about the price for the local production in Great Britain.

A. The 60-cent peaches are hothouse peaches. The outdoor peaches which come from France and other countries sell for about a shilling each. But peaches are a different thing on the British market to what they are on this market. Take a basket of peaches more or less bruised or damaged, as we get them here, and they would not look at them at all. Every peach must be perfect. They have been trained to that by these high prices, and if you sent them peaches shipped as we handle them in this country, they would not have them at any price. I think it would be possible to get at times as high as 10 shillings a case for Canadian peaches, but you would only sell a limited quantity at that price. We should try to reach what they call over there the middle-class trade, and if we could sell a large quantity of peaches at good prices, we would be serving a better purpose than to sell a limited quantity at a higher price.

By Mr. Wright:

Q. What is the quality of those French peaches compared with our own?

A. They say they are about the same quality. Our best peaches compare very favourably with any peaches grown outdoors. They want a large, well-formed peach, a little coloured, and they prefer a white flesh. They are used to a white-flesh peach. I have in hand a bulletin on these peach shipments, which gives all these details very fully and will be issued shortly.

SOUTH AFRICAN PEACHES.

The South African growers have been sending a large quantity of peaches to Great Britain, but they come during the winter months. They are arriving about this time of the year. They are also arriving in this city, and I am glad to know that there are Canadians who can afford to pay a shilling each for peaches, because

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that is what these peaches (showing one) are selling for to-day down on Sparks street—that is 25 cents each. The shipment of South African peaches in 1906 amounted to about 7,000 cases. Last year there were 23,000 packages of peaches shipped from that country to Great Britain.

By Mr. Thornton:

Q. To what market?

A. To London, and the prices realized average a little higher than ours. They sold at from 2s. 6d. to 8s. a case, and some even as high as 10s. a case.

Q. Have any South African peaches been shipped to Canada?

A. Yes, these are South African peaches (exhibiting peaches). They come via New York.

By Mr. Robb:

Q. Where did you buy those peaches?

A. I think they were purchased at Murphy & Gamble's store.

Q. The South African peaches apparently arrive at a better season than ours do.

A. Yes, they do.

Q. How do the freight rates compare?

A. The freight on South African peaches is 65s. a ton, Cape Town to Southampton, while the ocean freight on ours is only 25s. a ton of 40 cubic feet.

Q. The South African growers are fairly up to date when they made such shipments.

A. They are up to date, all right, in fact I do not mind admitting that I copied the South African package to a very large extent. I sent last year to London and had one of the packages forwarded here. We learned on inquiry that that style of package was giving the very best satisfaction, and we did not hesitate to copy it.

By Mr. Thornton:

Q. These South African peaches go first to London and thence to New York.

A. They come to New York direct and are shipped from that city to Canadian points.

Q. Can you tell how long it is since these peaches were picked?

A. Do you mean the South African peaches?

Q. Yes.

A. No. I only got them a few minutes before I came here.

By Mr. Wilson (Lennox and Addington):

Q. Do you know how long the journey from South Africa to New York occupies?

A. No, I do not. It takes 17 days from Cape Town to Southampton by the fast boats and a little longer by the other lines. That means that the South African peaches are a long time on the way from Cape Town to London, but most of them are grown quite near Cape Town.

By Mr. Thornton:

Q. At about what time do they harvest peaches in South Africa?

A. The peaches are on the market from January to March.

By Mr. Miller:

Q. Would not the market of the Canadian Northwest, where the purchasers are a little less particular about quality, be a better one for the Ontario grower?

A. A good many of the peach growers think that with the large increase in the acreage of peach orchards they would not find a market for all they might be able to produce. If they can find a good market for a quantity of their peaches in Great

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Britain at the higher prices I have mentioned, there is no reason why peach growing cannot be extended very considerably. The development of the British market will require a great deal of care, and I am just a little afraid that with the results which I have given in view, careless growers and packers will endeavour to take advantage of the market and make a fizzle of it. There is a danger of that happening, for the trade will have to be very carefully handled.

By Mr. McLean (Huron):

Q. Peaches are a most profitable crop on the whole?

A. I think they would be considered such. No man would plant apple trees on good peach land in the Niagara district.

By Mr. Blain:

Q. Do you know anything about the total production of peaches in South Africa?

A. All I know is that they have during this past year shipped 23,000 cases to London. I have the Trade Commissioner's report but he does not give any figures as to the total peach production. I fancy that the London market, apart from their local market, is the only one they have.

Q. What I wish to ask, is the production of peaches in South Africa on the increase?

A. I think it is increasing very rapidly. South Africa shipped in 1906 only 7,000 packages, and the shipment has been increasing every year until last year it amounted to 23,000 packages. But while the production of South African peaches is increasing considerably, their peaches will never compete with ours, because they come on the market at a different season. All the shipments are finished by the month of April.

By Mr. Wilson (Lennox and Addington):

Q. Then the South African peaches reach London at a better season?

A. Yes, it is a better season to sell any high-priced fruit in London. They have this advantage, too, that the peaches are landed in England in cool weather and not exposed to a high temperature when they are taken out of cold storage as ours are. It was pretty warm when our peaches landed in England last year, and that is a disadvantage we have to contend with. Although the South African growers are farther away in point of time and the expense of shipping is considerably greater, they have some advantages that we do not enjoy.

By Mr. Thornton:

Q. The transportation rates, say from Hamilton or St. Catharines, to the Northwest, would be far higher than they would be from Hamilton or St. Catharines to London?

A. Yes, the freight rate is higher.

Q. That would be a factor against cultivating the Northwest trade?

A. Yes, but there is no reason why an immense trade cannot be done in the Northwest.

Q. When I was in British Columbia, the fruit growers of that province told me their transportation charges from British Columbia to the Saskatchewan market amounted to exactly what they got for the fruit.

A. Of course the rail carriage rate is always higher than the rate for water carriage.

By Mr. Sealey:

Q. Under the order of the Railway Commission the express rates for shipment from the Niagara district to Winnipeg have been reduced from \$2.65 to \$2, or a saving of 11 cents a basket. The railway company gives a very fast freight service

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for perishable products such as fruit, the time occupied between Niagara and Winnipeg being about four and a half days.

A. Of course, that point of time is in favour of the Northwest market. The best we can do in putting Niagara fruit on the English market is three weeks from the time of picking until the fruit reaches the consumer. It is going to be rather difficult to always have the fruit in just the right stage when picked and packed so as to reach the consumer in the proper condition, because we are working on a very narrow margin, and peaches ripen quickly.

Q. Some of the fruit this last year went at express rates?

A. You mean to the Northwest?

Q. Yes.

A. We found in the shipping of peaches to Great Britain that the refrigerator car was by far the best and safest means of carriage, and of course shipment by freight was very much cheaper than by express to Montreal.

By Mr. Thornton:

Q. Going back to the question of the shipment of apples again, do you think that the exercise of care in the packing and shipping, that trade would be cultivated just in the way you have indicated?

A. I certainly think it would. I suppose all the members have received a copy of Bulletin 24, which we published last spring, entitled 'A Report on some Trial Shipments of Cold Storage Apples.' This bulletin gives full details of these shipments with the prices obtained for the apples, and it will be sent to any one who applies for it. That would have been the net price to the grower. They varied in price, but I will not go into that, because if you want information on that point you can get it in the bulletin referred to. We divided one lot of apples, leaving half of them in a frost proof warehouse and placing the other half in cold storage. We made a better net return on the apples placed in the cold storage than we did on those in the frost proof warehouse, although we did not have to pay any storage charges on the latter. The saving of waste paid the cost of the cold storage.

The CHAIRMAN.—I am sure we have listened with a great deal of pleasure, as well as profit, to the address Mr. Ruddick has given us respecting the work he has been carrying on. I think he has demonstrated to us clearly the immense possibility that we have in cold storage. He has shown us here to-day grapes that are not supposed to keep more than two or three weeks, which have been kept for several months and which are now in almost perfect condition. He has shown us most conclusively the great possibilities there are in the development of our fruit industry in the matter of carrying over fruit in cold storage. The address, I am sure, must result in very great benefit to the fruit industry of the Dominion of Canada.

Committee adjourned.

Certified correct.

J. A. RUDDICK.

PART II.
IMMIGRATION AND COLONIZATION

IMMIGRATION

HOUSE OF COMMONS,

COMMITTEE ROOM No. 34,

WEDNESDAY, February 15, 1911.

The Select Standing Committee on Agriculture and Colonization met at 11 o'clock a.m., Mr. M. S. Schell, chairman, presiding.

The CHAIRMAN.—As you have noticed from the agenda paper, we have with us this morning Mr. W. D. Scott, Superintendent of Immigration, who is to give an address on the work of his branch. It is now two or three years since he last appeared before this committee, and the work entrusted to his care is of such importance that we feel sure he will have something valuable to communicate in reference to immigration. I have much pleasure in calling upon Mr. Scott.

Mr. W. D. SCOTT.—As I have not appeared before this committee since 1908, I consider it wise to enter into a brief review of the policy and work of the department with which I am connected, giving an opportunity to members, after I have finished this review, to question me upon any points which I have omitted or upon which they require elaboration.

The policy of the department at the present time is to encourage the immigration of farmers, farm labourers, and female domestic servants from the United States, the British Isles, and certain northern European countries, namely, France, Belgium, Holland, Switzerland, Germany, Denmark, Norway, Sweden and Iceland.

On the other hand, it is the policy of the department to do all in its power to keep out of the country undesirables, which for the purpose of this review I will divide into three classes:—

1. Those physically, mentally or morally unfit, whose exclusion was provided for by Act of Parliament last session.

2. Those belonging to nationalities unlikely to assimilate, and who consequently prevent the building up of a united nation of people of similar customs and ideals.

3. Those who from their mode of life and occupations are likely to crowd into urban centres, and bring about a state of congestion which might result in unemployment and a lowering of the standard of our national life.

While neither the law nor the Orders-in-Council passed thereunder absolutely prohibit the landing in Canada of persons belonging to the second and third classes mentioned, still their entry has been made extremely difficult by the passing of Orders-in-Council Nos. 926, 918 and 920 which, briefly stated, provide that all persons of Asiatic origin must have in their possession, and in their own right at time of landing, the sum of \$200 each in cash; that all immigrants coming from countries issuing passports or penal certificates shall be required to produce either or both at time of arrival, and that all immigrants must come by a continuous journey from the country of their birth or citizenship, and on tickets purchased in that country or prepaid in Canada. None of these Orders-in-Council in any way interfere with the entry into Canada of desirable citizens or subjects of the countries I have already mentioned as being those from which immigration is encouraged, but they do put

many obstacles in the way of immigrants from Asia and southern and eastern Europe, and consequently the numbers coming or likely to come from those countries are correspondingly diminished. There is just one other Order-in-Council which is restrictive in its tendency, namely P.C. 924, which provides that immigrants must have from March 1 to October 31 the sum of \$25 per adult and \$12.50 per child in their possession at time of landing, unless going to employment at farm work, or in the case of females to domestic service, or going to join certain specified relatives able and willing to care for them, the amounts specified being doubled for the period between November 1 and the end of February. It was felt by the Government that persons going to city employment, where they would be without near relatives, would really require that amount to keep them independent until their first wages were due. I may here point out that the result of this regulation has been to greatly diminish the amount necessary to be expended on the care of indigent immigrants. For instance, in 1907-8 there was spent through the Winnipeg office, \$23,000 for looking after newcomers before they could be permanently settled, whereas in 1909-10 the amount spent for the same purpose was only some \$9,000. Likewise throughout the whole Dominion reports of hardship amongst newly arrived immigrants have practically disappeared since the inauguration of the money requirement regulation. Of course I do not claim it is by any means an infallible test, but still, generally speaking, the fact that an immigrant has money in his possession at time of landing may be accepted as proof that he has been thrifty and industrious. While it is admitted by all who come directly in contact with the thousands who yearly arrive in the country that a marked improvement in the class of immigrants was noticeable almost immediately after the going into force of the restrictive regulations, this is not the only point upon which the country may congratulate itself, for while the quality has improved the quantity has increased. The only reason I can give for this is that many, held back from going to Canada when they thought there was an open door through which all and sundry might enter, are now eager to take up their home in the Dominion when satisfied that due care is being exercised in the admission of new settlers. So much for the policy. With regard to the administration of that policy, I can only say that at all times the department has endeavoured to be as just and humane as possible, bearing in mind, however, that its duty is to Canada and to Canada only, and that while every applicant for admission who is likely to be an acquisition to the country shall be admitted if the law will permit it; on the other hand, every person who is likely to be a detriment to the country must be rejected if the law will allow it. Having dealt thus far with the general immigration policy, I will now consider the work in countries outside of Canada. In Great Britain and Ireland the immigration propaganda is carried on by advertisements in the newspapers, particular use being made of agricultural journals and papers circulating wholly or largely in the agricultural districts, very little expense being incurred with papers whose circulation is largely urban. The advertising in the newspapers is of two classes: (a) regular display advertisements, calling attention in brief form to the advantages which Canada offers, and giving the address of the nearest government office where full information can be obtained regarding the country, and (b) accounts of trips through Canada by journalists of note, the insertion of such being arranged for by the department, sometimes at the regular advertising rate, or sometimes in return for advertising which has been given to those journals. The newspapers advertising in the British isles for 1908-9 cost \$20,000 and in 1909-10, \$43,000. In practically no case does the department advertise in a newspaper which refuses, when requested, to publish a reasonable amount of good reading material regarding this country. At the present time in the British Isles the department is advertising in 550 papers. In the British Isles a method of advertising which has been very satisfactory has been the exhibit wagons, of which there are two, one working in the north of Scotland and the other throughout Ireland, and two motors, which travel through-

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out rural England from the middle of March until the end of October. These cars contain samples of Canadian grains, &c., and the parties in charge stop wherever a crowd can most conveniently be collected, lecture on the country, and distribute pamphlets and disseminate information generally. These cars are present at as many markets and fairs as possible, regular exhibits also being made at many fairs. An atlas of Canada is distributed at rural schools, and the rising generation used to agricultural life are thus made aware of the advantages which Canada has to offer. The sending of farm delegates to the British Isles is still pursued the same as in past years. Those of the farm delegates well fitted for public speaking lecture about five nights a week in halls which are arranged for, and at meetings which are advertised by the booking agents in the locality where the meeting is to be held. In almost all cases the buildings are filled to capacity, and as a rule, magic lanterns showing views of Canadian farm life are used in explaining the work which immigrants may expect to find upon their arrival. All those engaged in lecture work are carefully warned to keep well within the bounds of truth, and to arrange for as good a report in the local press as it is possible to obtain. In this way the lecturer reaches not only the audience who are present at the meeting, but also the reading public of the papers in which the report is inserted. Very often the chair at the meeting is occupied by the mayor or other municipal officers, and in other cases by clergymen or others interested in emigration work. At the conclusion of the meetings, it is usual to invite inquiries and any points upon which the audience may be in doubt are then thoroughly explained. Others of the farm delegates are advertised by the booking agents as being present in their offices, to give their personal experience of farming in Canada, and in the majority of cases a large number of inquirers call to learn of Canada from the lips of one who has had practical and personal experience. The regular offices of the department which carry on the work throughout the year by the supervision of the advertising, lecturing, exhibits, &c., are nine in number on the British Isles, located at London, Liverpool, Exeter, York, Birmingham, Aberdeen, Glasgow, Belfast and Dublin. The general work of all these offices is twofold in character: first to encourage all desirable persons to emigrate to Canada, and secondly to discourage the emigration of those who for any reason are likely to prove failures. Of these reasons lack of adaptability is one of the most common, at the same time one of the most serious and also one of the most easily perceivable to one used to dealing with emigrants. In the British Isles it is customary for booking agents, who come in contact with persons about whose success they have doubt, to refer the party to the nearest government office, where the case is considered without prejudice, and advice given which is considered in the best interests of Canada and the prospective emigrant. As there are over 3,000 booking agents in the British Isles, this phase of the work is very important, and when it is considered that a booking agent suffers a pecuniary loss from every prospective emigrant discouraged from emigrating, it is only fair to them to say that they deserve credit for the manner in which they carry on their work.

By Mr. Wilson (Lennox and Addington):

Q. Are all those agents your agents also?

A. All the booking agents?

Q. The 3,000 of them?

A. Yes. There are, however, some who are more interested in looking after their own interests than the interests of their customers or of this country. It is impossible, however, for them to carry on their work contrary to the regulations of the department for any length of time without coming into conflict with the department, and the steamship companies have evinced a willingness to withdraw their license from such as persist in misrepresentation or giving advice which is not in the best interests of people considering emigration to this country. In the past five

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years quite a number have been forced out of business on account of their unfair dealings, and even at the present time the cases of a few whose actions have been doubtful are under investigation. Inasmuch as a bonus is paid to booking agents selling tickets to farmers, farm labourers, and female domestic servants, each one of these booking agents is looked upon practically as an agent of the department, and they are supplied with literature by the department for distribution among their prospective customers. The same method is followed by Australia, New Zealand and other colonies seeking immigrants, but so far Canada has been able, by its superior class of literature, and the extra advantages which the country offers, to hold the services of practically all the agents, so that a person desirous of leaving the old country and going to a booking agent for advice, is much more likely to be directed to Canada than to the other colonies. The bonus paid at the present time is £1 per head on adults and 10s. on those between one and eighteen years of the occupations specified.

By Mr. Sharpe (Lisgar):

Q. What commission do you pay?

A. A bonus of £1 per head on adults, and 10s. on those between one and eighteen years of the occupations specified, that is farmers, farm labourers, and female domestic servants. For the calendar year 1909 the bonus was paid upon 4,063 men, 2,647 women and 1,405 children, while for the calendar year 1910 the bonus was paid upon 9,813 men, 6,015 women and 2,840 children. As the classes on whom the bonus was paid was the same for both years it is very gratifying to note that the numbers for 1910 are more than double those for 1909. New South Wales offers a passage to farmers and farm servants for £6, providing that he has £4 additional in money, and they offer a passage for £3 to his wife and £1.10s. for every member of his family under eighteen years of age, whether there be one or a dozen. They are offering passages to domestic servants for £3, providing they have £2 in money additional, and the booking agents gets £1 in each case. The state of Queensland is offering passages to farmers for £5 providing they have £50 in money additional, and free passages to wives and children, also free passages to domestic servants, providing they are country girls, and it pays 32s. to booking agents for every person booked, whether free or paid.

In all the British offices lecturing is one of the most important branches, and hundreds of lectures are delivered every year by the regular staff. The distribution of the Canadian atlas and school maps is having an excellent effect in directing the attention of the rising generation towards Canada, while the millions of copies of immigration pamphlets distributed in the past few years has gone a great way towards dispelling that ignorance regarding Canada which was at one time only too noticeable in the Mother Country.

On the Continent offices are maintained at Paris and at Antwerp, where newspaper advertising is carried on, the Canadian atlas distributed to schools when possible, lectures arranged, literature distributed, personal inquiries answered and a knowledge of Canada disseminated by all means possible. The government agents have the assistance of certain selected booking agents, to whom a bonus is allowed on passengers booked by them, the bonus being of the same amount and paid on the same classes as is the case in Great Britain.

In the United States, the department has eighteen regular offices, located as follows:—

Detroit, Mich.; Kansas City, Mo.; Milwaukee, Wis.; Omaha, Neb.; Grand Forks, N.D.; Toledo, Ohio; Great Falls, Montana; Boston, Mass.; Providence, R.I.; Spokane, Wash.; St. Paul, Minn.; Chicago, Ill.; Watertown, S.D.; Indianapolis, Ind.; Marquette, Mich.; Pittsburg, Pa.; Syracuse, N.Y.; Biddeford, Me.

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At each one of these offices a regular immigration propaganda is carried on throughout the year. Advertisements appear in the newspapers, and each newspaper carrying a departmental advertisement inserts twice a year a column and a half of reading matter pertaining to western Canada, which is prepared under the supervision of the department, bringing to the attention of the readers of the paper items of interest which are likely to induce people to emigrate here. At the present time advertisements are appearing in about 5,000 newspapers. In addition to the display advertisements and reading matter referred to, special articles on Canada are from time to time provided to such papers as are willing to accept them, in addition to which numbers of newspaper associations are taken through the country at departmental expense, the members of which provide articles on their trip, and publicity is thus secured which could in no other manner be obtained.

Next to newspaper advertising the exhibits at fall fairs, in rural villages, and county towns is the next best method of advertising in the United States. These exhibits are seen by exactly the class of people wanted in Canada, and no stronger argument can be made to them than a view of the produce of this country, which compares so favourably both in quality and quantity with that grown in the United States. From the regular offices and at exhibitions are distributed large numbers of the pamphlets prepared by the department. In the United States the department has 45 sub-agents, who issue to intending settlers certificates which entitle them to a cheap rate on Canadian railways, besides giving to the intending immigrants information which would be of use to them. These sub-agents are paid a commission of \$3 on men, \$2 on women and \$1 on children under eighteen years of age, belonging to the farm class, whom they send to the Dominion.

The literature distributed by the department in the British Isles, the Continent and the United States is compiled in Ottawa. Great care is taken that all statements are absolutely correct, and every effort is made to keep the maps and statistical information strictly up to date. Some of the pamphlets deal with the Dominion as a whole, while others deal with individual provinces. Besides distribution from the offices outside of Canada, a large amount is distributed direct from the head office.

When immigrants from Europe and the British Isles commence their journey and arrive at a British ocean port, they are, before going on board the vessel for Canada, inspected by a Board of Trade doctor and a doctor of the company upon whose steamship they intend to travel. During the voyage they are seen at least once daily, and once during the trip an individual medical inspection is made by the ship's surgeon, whose duty it is to report, on a departmental form, to the Canadian immigration doctor, any cases regarding whose physical or mental condition he may have reason to have doubt. These cases are given special attention, and since the introduction of this system the work of the ship's surgeon has shown marked improvement. Upon arrival all the immigrants are carefully examined by the Canadian immigration doctors and civil examiners, to see that they thoroughly comply with the existing laws and regulations. During the calendar year 1909, 155 British immigrants were rejected at ocean ports, and during the calendar year of 1910, 252 British immigrants were rejected at the ocean ports. Of these numbers it may be interesting to you to know that in 1909, 21 were rejected for insanity and 7 for tuberculosis, while in 1910, 19 were rejected for insanity and 20 for tuberculosis. After being passed by the immigration officials, immigrants attend to the checking of their baggage and arrange for their inland transportation, after which they embark on special trains and proceed to their destination. Owing to the large number of arrivals from the United States it was felt that some system of inspection along the international boundary should be inaugurated, and in April, 1908, a system of border inspection was established and gradually extended until the present, when all recognized routes of travel are covered by departmental officials. In 1908-9, there were rejected 4,580 intending immigrants, which increased to 8,997 in 1909-10

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By Mr. Proulx:

Q. Did you say there were 4,000 immigrants from the United States rejected?

A. In 1908-9 there were 4,580, and in 1909-10, 8,997. At the present time there are employed on this border service, 69 regular officers and 132 customs officers, who also attend to immigration matters. During 1910 these officers rejected 14,131 applicants for admission, who were not considered desirable, while during the same period only 252 British settlers were rejected at ocean ports.

Q. What was the reason for rejecting those immigrants?

A. They were rejected because the inspector did not consider them desirable, either on account of disease or under the Orders-in-Council passed by the Canadian government.

By Mr. Sharpe (Lisgar):

Q. Are there any of our agents travelling on the railway trains on the other side of the line?

A. Yes, some of them are

Q. Is there an arrangement between our government and that of the United States whereby agents of the American government can travel on Canadian trains in Canadian territory?

A. The arrangement is made with the railway companies. Trains are held for this purpose at the international boundary.

Q. But what is done in the case of trains that do not come to the international boundary?

A. They make arrangements in certain other cases also. Take the case of trains running through southern Manitoba, along the Deloraine branch, where the trains run close to the international boundary. I believe the American government have an officer there to look after the people and find out where they are going, because a great many undesirables could slip into the United States by driving across the boundary where there is no officer on duty.

At Vancouver, Victoria and Prince Rupert an examination is made of trans-pacific passengers similar to that conducted at Quebec, St. John, Halifax and Sydney on the east coast.

In the provinces of Ontario and Quebec there are 125 Canadian government employment agents, whose duties are to place at farm work or domestic service newly arrived immigrants desiring such employment. These agents are paid on a per capita basis of \$2 for each person so placed at work. If they do no work they receive no pay, and in this way it is possible to have the services, when necessary, of a much larger number than would be possible were they to be paid on a salary basis. Those going to and west of Winnipeg are handled through the immigration offices located at that point.

Located throughout the west, and under the supervision of the Dominion Lands agents, there are 63 land guides, whose duties are to conduct and locate persons wishing to settle on homesteads. These land guides are paid at the rate of \$2 per day by the department, the cost of food and team hire being borne by the settler whom they are guiding.

In connection with the success which has attended the immigration propaganda, I may mention that in the calendar years 1899 to 1904, of the 1,145,305 who left the British isles, 206,236, or 18 per cent, came to Canada, while in the years 1905-1909, of the 1,401,787 who left the British Isles, 515,720, or 37 per cent, came to Canada.

Canada and the United States are the two countries on the North American continent receiving immigrants from Europe, and it is therefore interesting to compare the classes going to the two places. An examination of statistics shows that during the last nine years of the immigration from Europe to Canada, 71 per cent came from the British Isles and those northern countries in which I have already

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mentioned active immigration work is carried on, while from Southern and Eastern Europe there were only 29 per cent. On the other hand, during the same period the United States has received 77 per cent of its European immigrants from the south and east, and only 23 per cent from the British Isles and northern continental Europe.

Turning now to the effect which immigration has had upon the actual settling of the land in the Northwest, we find very gratifying results which, while not wholly attributable to immigration, is largely effected by it. The Canadian Pacific Railway land sales increased from 376,046 acres in 1908-9 to 975,030 acres in 1909-10, or an increase in one year of 159 per cent. Canadian Northern Railway land sales increased from 116,662 acres in 1908-9 to 246,996 acres in 1909-10, or an increase of 112 per cent, and the acreage of land homesteaded from 6,252,960 acres in 1908-9 to 6,650,880 acres in 1909-10. We thus find that the land disposed of by the two companies mentioned and taken by homestead from the area of free grant land controlled by the Dominion Government increased from 6,745,668 acrts in 1908-9 to 7,872,906 acres in 1909-10.

By Mr. Sproule:

Q. You have no information, I presume, to show how much of that land was taken up by immigrants?

A. The homesteads were not all taken up by immigrants; a great many were taken up by Canadians. For instance, in the calendar year 1910, the total number of homestead entries made was 48,257. Of this number 13,494 entries were made by Canadians from all parts of the Dominion, and 672 by Canadians returning from the United States.

By Mr. Best:

Q. What remuneration is paid the immigration agents?

A. The regular agents of the government are paid a salary and also travelling expenses while away from headquarters. The booking agents are paid a bonus for the farmers, farm labourers and female domestic servants when they book, but receive no salary.

Q. Tell us what it cost the Dominion of Canada in 1910 to bring immigrants from the British Isles.

A. Do you mean for bonuses?

Q. The total cost of bringing out these immigrants in the form of bonuses, salaries and advertisements?

A. The approximate cost of bringing immigrants to Canada from the British Isles during the fiscal year 1909-10 was \$233,577. This includes salaries, bonuses, expenses of farmer delegates, advertisements, &c.

By Mr. Wilson (Lennox and Addington):

Q. Can you tell us how many immigrants each agent has sent or handled in the Old Country?

A. No.

Q. Do not the agents report?

A. No.

Q. Why do they not report? You pay the booking agents a per capita sum for every immigrant they send?

A. Yes.

Q. Why not have the same information from your regular agents?

A. We have never considered it necessary.

Q. Why?

A. Because they are working in all parts of the country, not selling tickets.

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Q. There might be an arrangement made by which the figures could be got; I mean arrangements between the agents on commission and those on salary?

A. It would not be possible to do that.

Q. You think you could not do that?

A. No. It is not possible.

Q. Could you not get information from the agents of the Canadian provinces that are also engaged in the immigration business as well as the Dominion?

A. Do you mean in Great Britain?

Q. Yes, you know who those agents are, do you not?

A. Yes. The Ontario government has an agent in Great Britain, and also the Provinces of New Brunswick, Nova Scotia and British Columbia.

Q. Those are all the provinces that have an immigration agent in Great Britain?

A. Yes.

Q. Well, should not these provincial agents be working in unison with your branch?

A. They are working in perfect harmony with our department; in fact I may say that most of the literature which they distribute is printed by our department.

Q. Are any of the provincial governments paying a bonus on immigrants or granting assisted passages to immigrants?

A. The Ontario government, I understand, do something of that kind. Last year they assisted passengers of a certain class; they paid a portion of passage money to Canada of farmers, farm labourers and domestics.

Q. Does that not interfere with our Dominion law?

A. No, not at all.

Q. I understand that no assisted passages can be paid?

A. That is quite true. The people the Dominion Government agents deal with are not the same class as those whose passages are assisted.

Q. I understand that the law makes no difference in the matter of the class?

A. The only persons that we pay the bonuses on now are farmers, farm laborers and domestic servants.

Q. Have they got to get a permit from the Assistant Superintendent at London before they are allowed to come?

A. They have to get a medical certificate.

Q. But the people whose passages are partially paid by the Ontario government, do they require to get a certificate from our representative in London?

A. We agree to accept the card of the Ontario government's agent in London, Mr. Colcook, that the immigrants he sends are desirable people.

Q. You have inspectors along the frontier in Canada?

A. Yes.

Q. Are they engaged the year round?

A. Yes.

Q. Could you give us a list of the places to which they are attached?

A. Yes, I could furnish you with that.

Q. I think it would be desirable that we should have that information, also the salaries paid to them?

A. Yes.

Q. Are they regular salaried officers?

A. The boundary inspectors are all salaried officers.

Q. I find that one inspector was at Brockville for seven months last year. Did you not have an agent there for a longer period than seven months?

A. We have no boundary inspector at Brockville.

Q. Well, what was this man's business?

A. I suppose he was placing farm laborers for farmers, at points around Brockville.

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Q. Then, do you get men from the outside to go to these towns, and pay them salaries and also expenses?

A. Which?

Q. Do you pay these men regular salaries?

A. To whom are you referring?

Q. These men you have been speaking of?

A. Yes, to the boundary inspectors.

Q. This man I spoke of was getting \$100 a month and some of his expenses?

A. What is his name?

Q. George Anson Aylesworth?

A. Mr. Aylesworth is an inspector of the employment agents throughout Ontario. He sees what work they are doing and ascertains their suitability for the work and so on. In the winter time we employ him at lecturing in England; he is there now.

Q. Why was he located at Brockville?

A. I did not say that he was.

Q. The Auditor General's Report says so?

A. That may be.

Q. Cannot we depend upon the Auditor General's Report?

A. I could not tell you, I am sure. If you want to know Mr. Aylesworth's headquarters, I can tell you.

Q. I know where he lives. I know the man and I have nothing to say against him. I simply want to get this information. I notice his name on a return brought down of special immigration agents appointed since 31st of March, 1909. I also observe in the same return the name 'Agnes Dean Cameron.' Is that a lady?

A. Yes, a lady.

Q. She gets a pretty good salary, \$220 a month, and her expenses last year amounted to \$1,770.02. What does this lady do?

A. She writes for magazines and newspapers.

Q. Where?

A. She is in London, I believe, just now.

Q. She is employed in connection with the office there?

A. Yes.

Q. Well, how can you account for such a bill of expenses as I have mentioned?

A. She travels and lectures, besides doing newspaper work.

Q. But do you not think that the amount of expenses is very large?

A. I think that it is very reasonable.

By Mr. Herron:

Q. What did you say her name was?

A. Agnes Dean Cameron. She wrote a work on 'The New North.'

Mr. ROBB.—It is one of the finest works ever published on that country.

The WITNESS.—I have not read it.

By Mr. Wilson (Lennox and Addington):

Q. I see here too the name of 'Reverend J. A. Winfield, St. Stephen, N.B.' He is paid a salary of \$100 a month, and his expenses were \$1,340.71. What does he do?

A. He is a special agent in the Old Country. He has been working principally in connection with bringing out immigrants to Prince Edward Island. He has been very successful, having brought out a party of 60.

Q. His expenses were very much more than his salary?

A. That may be. Some of us do not get sufficient salary.

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Q. I notice another man here, William Griffith. His salary is \$100 a month, and his expenses, \$1,813.84. What is his business?

A. He was working in Wales last year.

Q. He also gets a pretty good salary. Now, what arrangement have you about furnishing clothing to your officers?

A. We furnish all our regular officers with two uniforms a year.

Q. And sometimes three?

A. Occasionally they meet with accidents and have to get a third uniform, but very rarely.

Q. They get pretty good clothes, don't they?

A. I think the average cost is about \$25 a suit, and they pay one-third of that themselves. It costs the Department usually about \$16 or \$17 a suit.

Q. How long has that been going on.

A. Since the passing of the last Immigration Act.

Q. That is last session?

A. Yes, last session.

Q. I notice they get pretty good overcoats too?

A. Yes, they usually get an overcoat once in two years.

Q. At \$35?

A. Yes.

Q. I notice in the United States they do not pay for any uniforms for their officers?

A. I do not know anything about that.

Q. That is in their regulations. If you will look at Article 47 of the Regulations you will find that they do not pay for the uniforms, that the officers pay for their own uniforms?

A. I think their salaries compare a little higher.

Q. Have you withdrawn any agents from any part of Europe?

A. No.

Q. You are still in Southern Europe?

A. We never were in Southern Europe.

Q. Didn't the North Atlantic Trading Company work in Southern Europe?

A. That is many years ago. We have not in late years.

Q. How many agents have you over there?

A. We only have them in Antwerp and in Paris.

Q. I understood you had withdrawn some of your agents in Europe?

A. No.

By Mr. Herron:

Q. You spoke of having commission agents in the United States. How do they trace the emigrants from where their ticket is taken and know that he crosses the boundary of the States into Canada?

A. We have an arrangement with the Canadian railway companies, whereby they accept a certificate issued either by our own officers or by those commission men, for a cheap reduced rate on their lines from the boundary line to where they wish to settle. You know a railway clerk cannot issue a reduced rate unless he has some authority. These certificates are accepted by the railway company for issuing a reduced rate from the International boundary to the point in the west where the immigrants wish to settle. After the railway companies have checked their reports, they send these certificates to us so that we are able then to check our reports with them.

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By Mr. Sproule:

Q. Would a man going in to look over the country, presumably with a view of settling in it, get the reduced rate?

A. Certainly.

Q. Though he might go back and never settle in Canada?

A. Yes.

By Mr. Wilson (Lennox and Addington):

Q. Does the government pay any part of the reduced rate?

A. No.

By Mr. Sharpe (Lisgar):

Q. How many came over from the United States last year?

A. In 1909-10 there were 103,798, and for the nine months up to the end of December in the present fiscal year there were 97,702.

Q. You have no way of telling then, how many of those went back? As Dr. Sproule has said, they might just get their certificate issued by an agent and come over and look at the land, and, if it was not satisfactory, go back. You have no record of them?

A. No, we do not keep any track of the outbound.

Q. No telling how many of those 103 odd thousand that came over settled in Canada?

A. There is by homestead entries. For instance, last year for 1909-10, there were 14,032 entries granted to Americans.

By Mr. Wilson (Lennox and Addington):

Q. The United States report gives a very different version of it. In the report of their commission, which was issued last year, they say we got 116,377 immigrants and that they got from us 94,496, leaving a net gain to us of 21,881. Of the total that went into the United States, they say that 44,328 were Canadian citizens and that left 50,168 that were foreigners. That is in their commissioner's report just issued?

A. We do not keep any track of people leaving Canada.

Q. Why not? Lord Strathcona keeps count. You have seen his report to the department?

A. No, I have not.

Q. It is in your report, in the Blue Book issued by the department? He says there were sent to Canada 113,315, and that there returned 46,791, leaving a net increase to us of 66,524?

A. Of course it is a very easy thing to keep track of ocean transportation, because they have to file manifests, but on the International boundary where there are ferries and trains crossing and re-crossing, it is an absolute impossibility.

Q. Well, the Americans seem to keep it?

A. That may be. We have no desire yet to interfere with the traffic or to bother people. I think possibly they have enough troubles going backwards and forwards across the boundary without being asked further questions.

Q. But we cannot tell, unless we have some information of the people who leave this country, what immigration we are getting. If we did not have in Lord Strathcona's report the number of those who went back, I would have supposed that 103,000 came in, but he gives us the 46,000 that returned.

A. They count everybody that goes on a ship, whether on a single or a return ticket.

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By Mr. Wilson (Laval):

Q. First-class passengers, too?

A. Everything.

By Mr. Wilson (Lennox and Addington):

Q. I think your own report gives a net increase the same as this?

A. During the year 1909-10 the steamship companies carried into Canada 148,843 people. We only classified 104,996 as immigrants. There were 26,953 people who, when examined at the ocean ports on the return journey, said they were either Canadian-born or had been in Canada before. Therefore we classed them as returned Canadians, not as immigrants. Of the first-class passengers 11,401 came to Canada and steerage 137,442, or a total of 148,843.

Q. Out of which there were some from the United States, I suppose?

A. That is for Canada only.

Q. But what about those that came to Canada from the United States?

A. They are not in this classification at all.

Q. I did not like to bring all the reports, the United States reports, but I think they are very interesting because they give a lot of information that our reports do not give. I do not see why we are not entitled to know the total number that leave Canada just as well as those who come in?

A. I would not like to have the job of questioning the people going across the boundary.

Q. You have quite a job now. Will you furnish us with a list of inspectors?

A. At the boundary points?

Q. Yes.

A. Yes.

Q. Their salaries, when they were appointed, and not only the salaries but the expenses, and whether they are on commission or are regular salaried officers?

A. There are none on commission.

Q. Is Mr. Aylesworth in the service by the year?

A. By the year.

Q. He gets what?

A. I think \$100 a month.

Q. And expenses?

A. When travelling, yes.

Q. How long has he been that way?

A. I should think for three or four years.

Q. The reason I am interested is that he came down to my town during election time and made a speech in the Liberal room. He was only giving information on immigration, of course.

By Mr. Wilson (Laval):

Q. How many agents are there?

A. On the International boundary?

Q. Yes?

A. We have 69, I think.

By Mr. Herron:

Q. You were speaking of guides; I would like to know what is the arrangement in regard to them?

A. Do you mean the land guides?

Q. Yes.

A. The land guides are paid \$2.00 for each man they settle on a homestead. The settler pays for his own food and his own livery hire.

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Q. I thought you said you paid them \$2.00 a day?

A. No. They are paid \$2,00 for each settler they settle on land.

By Mr. Sharpe (Lisgar):

Q. Do you know the value of the settler's effects brought into Canada?

A. No. The Customs Department will tell you that. When the immigration officer issues a certificate for low rates to intending immigrants, he asks the individual for the value of his cash and effects, and the information is reported to us. We do not compile all the facts because it would be a very tedious thing, but we do take individual States, and the sum each individual brings in averages about \$1,000 per head.

Q. I saw a statement in the *Winnipeg Free Press* a short time ago purporting to give the amount of each settler's effects and how much cash he brought in last year. I was wondering if you had any record of that.

A. The Customs Department would have the amount of actual effects brought in.

Q. The Customs Department would not have the amount of cash though?

A. No.

Q. How would a newspaper get hold of that information?

A. I could not say, I am sure.

Mr. SHARPE.—The newspaper referred to claimed there was about \$150,000,000 brought across during the year.

By an Honourable Member:

Q. You have no way of following up information in order to ascertain how many settlers, American particularly, would have taken out their patents for homesteads and then returned to the United States?

A. No.

Q. There is no way of ascertaining that?

A. No.

By Mr. Sproule:

Q. I understand you to say that you pay your sub-agents in the United States \$3 a head for those immigrants they send into Canada?

A. Yes.

Q. How do you check the number they send in?

A. We check them by the certificates that are issued.

Q. You told us some time ago that these certificates are issued to tourists?

A. They are issued to prospectors as well, and in order to obtain the return ticket there would have to be marked on the face of the certificate 'tourist' or 'prospector.'

Q. Is the immigration agent paid \$3 a head for those the same as for the others?

A. No. The amount paid last year for bonuses for these local agents was very small, being only \$3,900.75. The year before, 1908-09, it was \$4,127.75.

By Mr. Wilson (Lennox and Addington):

Q. Have you got the amount paid to the United Kingdom in bonuses?

A. I think so.

Q. You might give it to us please.

A. The British bonuses paid in 1908-09 amounted to \$35,955.08, and in 1909-10 the amount paid was \$39,145.65.

Q. I would like to get the names of the special agents you are sending to the Old Country, their place of residence in Canada, the points to which they have been sent, and the amounts paid to them for salary and expenses.

A. For what period would you like that information?

Q. I would like to have it for all of last year and up to the 1st of February this year.

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A. It would be difficult to get the information up to the 1st of February this year, because while these people are in the Old Country their expenses are paid from the London office, and we would not get the report of disbursements to them until the 15th of the following month.

Q. Then up to what date can you give me that information?

A. Up to the end of January, probably, or December.

By Mr. Wilson (Laval):

Q. Can you give the number of Boundary Inspectors, roughly speaking?

A. I think there are on the International Boundary 69, but I will give you the correct figures in a moment.

Q. I am not insisting upon the exact figures.

A. I think the number of regular agents is 69. They do nothing else but attend to immigration work. Then there are one hundred and some odd Customs officers who assist in the Immigration work. Some of these are paid \$100 and others \$50 a year for the immigration work they do, in addition to their stipend as Customs officers.

By Mr. Robb:

Q. Do the railways pay any share of the cost of advertising for immigrants who come in and buy their lands?

A. Yes, in this way: they grant the settler a reduced railway rate. Then they give our officers free transportation, and they issue a very large amount of literature themselves.

By Mr. Sproule:

Q. In giving the land sales, as an evidence of the increased immigration I presume, you have no data which would show the percentage of land sold to immigrants and the percentage that may have been sold to Canadians?

A. No.

Q. I would imagine that the immigrants would not be likely to go in very extensively for land purchases.

A. Well, the class of immigrants we are getting now is improving all the time. I notice in reading one of our reports from Great Britain the statement that one farmer was coming out with £15,000, or \$75,000. Now that is a very nice sum of money to bring out to a new country.

Q. I should think they would prefer to purchase homesteads with some improvements on them.

A. A couple of years ago we had a party of Scotch Agriculturists out. Before we brought them here we experienced active opposition from those farmers to the emigration of farm labourers; they wanted them to remain in Scotland. Well, we induced this party to come out to Canada and they went over the Dominion from Prince Edward Island to the Pacific Coast. The consequence was that after seeing the country they purchased 37 quarter sections and are putting 37 farmers from Scotland on those lands.

Q. They purchased that land from the railroad companies?

A. No. They purchased from private individuals; it was an old ranch. I think they purchased it from Mr. Hull, a stock breeder who had an old ranch to sell.

By Mr. Sinclair:

Q. Can you tell me if the advertisement given to Canada by the recent reciprocity agreement has brought in more inquiries than usual from the United States?

A. I could not tell you that, Mr. Sinclair. All I know is that I had a letter from one of our Inspectors in the States, who said it was causing a great deal of

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discussion there, and he added that any discussion in regard to Canada was good advertising.

By Mr. Sharpe (Ontario):

Q. Has your correspondence fallen off a little?

A. No; it has not. I might say that during last year I received in our office here over 286,000 attachments to our files. That will give you an idea as to the volume of our correspondence. A thousand letters a day is a pretty good showing.

By Mr. Stanfield:

Q. Has any record been kept of the number of domestics brought out last year?

A. In 1909-10 we had 8,396 domestics.

Q. Have you kept any record of them?

A. Yes, we do keep track of them?

Q. Have you any record of the number that have gone west?

A. They scatter generally throughout Canada.

By Mr. Wilson (Lennox and Addington):

Q. I think you give the number of deportations in your annual report, but not the reasons for which the deportations were made.

A. The reasons for deportations? Yes, that information is in the annual report.

Q. I did not notice it there.

A. It is also in this small pamphlet (holding up pamphlet) that we are distributing, which gives the deportations by nationalities and also by causes.

By Mr. Robb:

Q. Is the list of deportations sent back to the booking agent?

A. Where we have paid a bonus on an immigrant and he is afterwards found to be undesirable through insanity or sickness, we deduct it when we pay the next bonus.

By Mr. Stanfield:

Q. In what way do you follow up the domestics? Have you any letters to show what becomes of them?

A. We send a circular letter to the employers and ascertain the degree of satisfaction the domestics are giving, and what they are being paid. We have thousands of replies in the office from employers, and I should think that from 95 to 98 per cent of these replies are satisfactory.

Q. You have nothing to do with the domestics that come from the province of Nova Scotia?

A. No.

By Mr. Sproule:

Q. You are referring, I presume, to the immigrants that you settle yourselves in the country?

A. Yes.

Q. As farm labourers?

A. I mean domestics that are settled in the country or in the cities, wherever they are needed.

Q. And you think that 90 per cent of those domestics are doing satisfactorily?

A. Yes, from the replies we have received from the employers.

Q. That has not been our experience.

A. Perhaps you struck one of the bad ones.

1 GEORGE V, A. 1911

By Mr. Wilson (Lennox and Addington):

Q. Will you furnish to the committee all the Orders-in-Council and regulations that you have?

A. Yes, I have a copy here.

Q. Have you a copy of the new ones issued lately?

A. Not since this volume was published. The Orders-in-Council are all in this.

Q. Do you not issue regulations, circulars and so on?

A. Do you mean instructions to agents?

Q. Yes. Are there very many of them? You haven't them in consolidated form?

A. No.

Q. Then we cannot tell whether the circulars are still in force or not?

A. Yes, if you could tell me the subject.

Q. I would have to look the matter up very carefully.

A. There are instructions issued to boundary inspectors, ocean port inspectors, and so on.

Q. I would like to see the Orders-in-Council.

A. The Orders-in-Council are all printed in this book, immediately after the Immigration Act.

Q. Mr. Oliver caused some amendments to be made to the Act this year. Was there anything of importance in those changes other than you have explained?

A. The idea is to explain what is meant by certain words and to enable us to carry out the meaning of the Act better; that is all. Those instructions have not been printed yet.

Q. Are you going to change your ways and tell us now whether you will keep track of those people that leave the country as well as of those that come into it?

A. I think you had better discuss that matter with the Minister.

By Mr. Sproule:

Q. I suppose you have no source of information that would enable you to determine the number of immigrants that turn out criminals after they come here?

A. I can tell you the number of immigrants that we deport after they get into the country and become criminals.

Q. The number of deportations and the cause would be shown in your report?

A. Yes

By Mr. Wilson (Lennox and Addington):

Q. If a man is convicted before a magistrate do you deport him?

A. Yes, if he is reported to us by the clerk of the municipality or the magistrate.

Q. But you do not deport in every case of conviction, for example if a man happens to get drunk?

A. Unless we found he was an habitual drunkard. If the man was before a magistrate for drunkenness continually we would certainly send him back.

Q. Would it not be possible, Mr. Scott, for you to issue your immigration matter in a separate pamphlet?

A. We are doing so. We are bringing it out as soon after the close of the fiscal year as possible.

Q. I have not received this year's yet.

A. Copies were sent to every Member and to every Senator.

The CHAIRMAN.—We have listened with great pleasure to this very illuminating address by Mr. Scott, and the information that he has given us will be read with profit throughout the country. I am sure we will be very glad to have him come before us at any time and explain what is being done by our Immigration Department.

APPENDIX No. 1

We are pleased to have Mr. Wilson taking the interest that he is in this matter, because friendly criticism is always valuable when the critic's motive is to improve the existing conditions. I am sure the committee thoroughly appreciate the address which Mr. Scott has given us this morning.

Committee adjourned.

Certified correct,

W. D. SCOTT.

1 GEORGE V., A. 1911

ADDENDUM

List of Canadian Government Border Inspectors.

NOVA SCOTIA.

Station.	Date of Appointment.	Inspector.	Salary per annum.
			\$ cts.
Clementsport		W. C. Jones, sub-coll. cus- toms	Without salary.
Yarmouth		W. R. Cann	100 00
Port Hawkesbury	Feb. 5th, 1910.	J. J. Williams	300 00

NEW BRUNSWICK.

Andover		Thos. R. Cameron	100 00
Aroostook Junction		W. E. Spike	100 00
Clair	July 25, 1910.	Jas. A. Long	800 00
Centreville		Willmott Ballock	100 00
Debec	July 25, 1910.	Oliver Hemphill	800 00
Edmundston	Jan. 13, 1911.	Francis Michaud	800 00
Grand Falls		H. W. Taylor	100 00
Green River		Joachim Theriault	100 00
Milltown		D. K. Harmon	100 00
Richmond Road, (address, Wood- stock, N.B.)		Robt. Warren Bull.	100 00
St. Leonards	Dec. 21, 1908.	Epiphane Nadeau	900 00
St. Stephen	April 15, 1909.	G. H. Sullivan	800 00
"		Thos. K. McGeachy	100 00
"		S. N. Hyslip	100 00
"		N. B. Hawthorne	100 00
St. Andrews	July 25, 1910.	Jas. Cummings	800 00
Upper Mills		Henry Hacker, P.O. ad- dress, Baring, Me.	100 00
Vanceboro, Me.	Dec. 1, 1908.	Newton S. Dow	1,100 00
McAdam Junction, N.B.	April 30, 1909.	Robt. O'Shaughnessy	1,000 00
Wilson's Beach		Jno. A. Newman	100 00
Welsh Pool, (address Campobello).		Alvin Parker	100 00
Portland, Me.		J. Williams	100 00
Boston, Mass.		J. Lunney, (returns to St. John on Nov. 1).	
Highwater	Feb. 19, 1909.	1. Chas. Greene	900 00
"	March 1, 1909.	2. M. T. Eldridge	900 00
Beebe Junction	April 7, 1909.	Desire Neveau, Jr.	900 00
"		J. F. Paquette	50 00
"		W. Curtis	50 00
"		Homer Worthem,	50 00
"		C. H. Bellam	100 00
"	June 1, 1910	N. C. Knight	50 00
Coaticook	Dec. 4, 1908.	L. B. Murphy	800 00
"	July 25, 1910.	Louis Audet	800 00
Comin's Mills		Jas. P. Simpson	100 00
Dundee		Jno. D. McMillan	100 00
Frelighsburg		J. H. Baker	100 00
Georgeville and Newport		J. A. Hutchinson	100 00
Paquetteville	Dec. 1, 1910.	Geo. Dagenais	800 00
Magog	July 6, 1910.	D. L. Mullins	50 00
Megantic	April 15, 1910.	Angus Cowan	800 00
Malone, N.Y.	Nov. 21, 1903.	A. Pansera	1,000 00
Noyan Junction, address, Alburg, Vt.	March 27, 1909.	Benj. Menard	800 00

APPENDIX No. 1

List of Canadian Government Border Inspectors.—*Continued.*NEW BRUNSWICK—*Continued.*

Station.	Date of Appointment.	Inspector.	Salary per annum.	
			\$	cts.
Rouse's Point, N. Y.	June 1, 1908	Calixte Commette.	1,200	00
"	Dec. 1, 1910	Edouard Moquin.	800	00
"		E. A. Gallett (Lacolle Jun.)	100	00
Stanhope		O. L. Young.	100	00
St. Albans, Vt.	May 20, 1906	1. Jas. Stahl.	1,000	00
St. Armand, Quebec.	June 5, 1909	2. Stellman P. Knight.	900	00

ONTARIO.

Amherstburg		N. Barrett.	100	00
Bath		D. T. Rowse.	100	00
Belleville		Wm. Williamson.	50	00
Blind River		G. C. McGuire.	100	00
Bridgeburg	Dec. 15, 1908	F. S. Dilworth.	1,100	00
"		F. T. Pattison.	100	00
"		Wm. Griffin.	100	00
"		J. Wilson.	100	00
Brighton		J. H. McMaster.	50	00
Brockville		Thos. Burns.	100	00
Bruce Mines		Matthew Grose.	50	00
Cardinal		No appointment.		
Cobourg		J. G. Hagerman.	100	00
"		Jas. Bulger.	100	00
Collingwood		W. F. Toner.	100	00
Cornwall	Oct. 20, 1909	{ J. M. O'Callaghan.	800	00
		{ Ed. J. Cleary.	100	00
		{ J. H. Cline.	100	00
Courtwright		Robt. Stockdale.	100	00
Crystal Beach		Jno. Young.	100	00
Ridgeway, P. O.		W. J. Kirk.	100	00
Cutler		F. J. Drewitt.	100	00
Depot Harbour		T. C. Maloney.	100	00
Deseronto		Warren Eagan.	50	00
Erie Beach (a/ d. Fort Erie P. O.)	July 9, 1910	A. E. Seaton.	900	00
Fort Erie	Dec. 1st, 1908	W. F. Wilson.	100	00
"		P. S. Johnston.	100	00
"		J. A. Osborne.	1,200	00
Fort Francis	Jan. 1st, 1909	A. H. Wilson.	900	00
Fort William	Oct. 10, 1908	M. J. Lee.	100	00
Gananoque		Jas. L. Grant.	50	00
Goderich		Jas. D. Bullis.	100	00
Iroquois		Appointment deferred un-		
Kincardine		til next spring.		
Kingston		Geo. H. Comer.	50	00*
"		Jas. Hanley.	50	00*
"		W. D. Graves.	50	00
"		Jno. Geoghogan.	100	00
"		G. C. Congdon (in summer)	1,200	00
Lewiston, N. Y.		Richard English.	50	00
Little Current		Saml. Vyvyan.	50	00
Manitoulin Island		A. G. F. Drew.	100	00
Midland		*1. Chas E. Willox.	1,200	00
Morrisburg	June 18, 1908	2. Beckley Carter.	900	00
Niagara Falls	May 15, 1909	3. Matthew H. Prentiss.	900	00
"	Aug. 19, 1909	4. Michael G. Goodsir.	900	00
"	Oct. 4, 1909	5. George Thomas.	900	00
"	Oct. 7, 1909	(a) Frank Whitewell,		
"		(Queenston Bridge...	100	00
"		(b) Ralph Field, (Queenston		
"		Bridge.	100	00

* Sum'r season.

1 GEORGE V, A. 1911

List of Canadian Government Border Inspectors.—*Continued.*ONTARIO—*Continued.*

Station.	Date of Appointment.	Inspector.	Salary per Annum.
			\$ cts.
Niagara Falls		(c) Rich. Sloggett, (G.T.R. Br.)	100 00
"		(d) J. M. Wallace, (G.T.R. Br.)	100 00
"		(e) Jno. Murray, (G.T.R. Br.)	100 00
"		(f) J. J. Flynn, Head Office	100 00
"	June 1, 1910.	(g) Rich. Gott (Mist Ferry Dock in summer, Ice Bridge in winter)	100 00
Owen Sound		P. J. Malone	50 00
"		Walter McNeil	50 00
"		Jas. Frost	50 00
Ojibwa	Feb. 19, 1909	Arsene Dufour	900 00
Parry Sound		Wm. Ireland	50 00
Pictou		W. T. Ross	50 00
Port Arthur	1908.	J. M. McGovern	1,200 00
Port Burwell		Wm. Backhouse	50 00
Port Colborne	Aug. 11th, 1910.	C. D. Emmet	100 00
Port Dalhousie		W. B. Clark	100 00
Point Edward		Orlando S. Clark	100 00
Port Hope		John McMullen	50 00
Port Dover		J. R. Davis	100 00
Port Lambton		Albert Mickle	100 00
Port Stanley		W. H. Farr	100 00
Prescott	Dec. 25, 1908.	1Geo. Walsh	900 00
"	Dec. 25, 1908.	2C. S. Easton	900 00
"	June 19, 1909.	3Bernard C. Hughes	900 00
Rainy River		Covered temporarily by Inspector at Sprague.	
Rockport		Wm. Dickson	100 00
Rondeau (address Erieau, P.O.)		Chas. Mallory	50 00
Sarnia	March 3, 1909	1Walter R. Meyers	1,000 00
"	March 30, 1909.	2Peter Symington	900 00
"	Jan. 7, 1909.	3Henry Bell	800 00
"		Andrew Murray (Ferry)	100 00
"		Alex. Ross (Ferry)	100 00
"		Jas. Alcock (Ferry)	100 00
"		D. Gray (N. Nav. Co.)	50 00
Sault Ste. Marie	Feb. 27, 1909	1J. C. Armstrong	1,100 00
"	April 8, 1909	2Thos. Hanratty	1,000 00
"	July 18, 1910.	3Franklin Tier	900 00
"	Dec. 23, 1910	4George B. Cahoun	800 00
Sombra		John Burnham	100 00
Southampton		Appointment deferred until next spring.	
Thessalon	June 1, 1910.	W. A. McEwen	50 00
Toronto	Jan. 21, 1908	Thos. Anketel	840 00
Trenton		Robt. Fraser	No salary.
Walkerville		1A. T. Montreuil	100 00
"		2John Bailey	100 00
"		3Wm. Leighton	100 00
"		4Francis St. Louis	100 00
"	Feb. 1, 1911.	5Arthur C. Teno	100 00
Walpole Island		Wm. Hinnegan	100 00
Windsor	Aug. 29, 1908.	1Thos. T. Robinson	1,200 00
"	Feb. 15, 1909	2C. E. Mason	900 00
"	Feb. 15, 1909	3Thos. Brian	900 00
"	Jan. 18, 1910.	4John M. Halstead	900 00
"	Feb. 5, 1909	5F. Chas. Quallins	800 00
"	Oct. 1, 1910.	6David J. Cheyne	800 00
"		aNarcisse Thibert (Ferry)	100 00
"		bAlbert J. Walker	100 00
"		cJos. W. Yearsley	100 00

APPENDIX No. 1

LIST of Canadian Government Border Inspectors.—*Continued.*ONTARIO—*Continued.*

Station.	Date of Appointment.	Inspector.	Salary per Annum.
			\$ cts.
Windsor		d Geo. H. Bennett	100 00
"		e Jas. W. Kerr	50 00
"	April 1, 1910	f Thos. Hy. Yates	100 00
"	Jan. 1, 1911	g Marshall Thompson	50 00
Wolf's Point (Summer season only) address Walkerville, P.Q.			

MANITOBA.

Bannerman	Jan. 8, 1901	D. W. Agnew	1,200 00
"		Philip Scott	100 00
Emerson	Aug. 18, 1903	1 T. J. Connell	1,200 00
"	May 1, 1909	2 F. S. Bell	1,100 00
"	Feb. 10, 1911	3 Peter Palmason	1,000 00
Gretna	April 1, 1910	O. J. Gould	1,000 00
Haskett		J. A. Klassen	100 00
Mowbray		Jas. Conner	100 00
Sprague	Feb. 10, 1909	J. W. Caldwell	900 00

SASKATCHEWAN.

North Portal	April 1, 1905	Geo. McIntyre	1,000 00
"	May 1, 1904	J. A. Potvin	1,000 00
"	Aug. 5, 1909	Hy. Watson	1,200 00

ALBERTA.

Coutts	Oct. 1, 1898	C. Mair	1,200 00
"		H. Tennant	100 00

BRITISH COLUMBIA.

Atlin			100 00
Bridestville		A. F. Eddy	100 00
Carson		Jas. A. Stewart	100 00
Cascade (Laurier)		A. Cameron	150 00
Douglas (near White Rock; for earlier inspection at Douglas see File 774004 i.e. Whiterock)			
"		C. J. Trodden	100 00
Gateway		A. J. Joule	100 00
Grand Forks	January 15, 1909	P. T. McCallum	1,000 00
"		W. J. Cook	100 00
Gauges Harbour P.O. (Sault Spring Island)		A. R. Bittancourt, patrol boat for Gulf of Georgia, ½ share of expenses	800 00
"		A. E. Skinner	1,200 00
Huntingdon	{ Feb. 26, 1908	John McMurphy	1,000 00
"	{ May 10, 1910	W. Frith	150 00
Keremoos		Jno. Dunlop	1,000 00
Kingsgate	April 18, 1906	A. J. Chisholm	100 00
"		(Resigned)	
Ladner		Thos. D. Conway	100 00
Ladysmith		J. H. Methot	100 00
Myncaster		R. D. Kerr	150 00
Midway			

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List of Canadian Government Border Inspectors.—*Continued.*

Station.	Date of Appointment.	Inspector.	Salary per Annum.
			\$ cts.

BRITISH COLUMBIA—*Continued.*

Osoyoos.....		D. Coristine.....	100 00
Nanaimo.....		Henry L. Good....	100 00
Paterson.....		W. M. Wood.....	100 00
" supervised generally by Inspr. O'Neill of Waneta.....			
Peardonville.....		S. Campbell.....	100 00
Prince Rupert.....	Sept. 20, 1909.	Dr. J. O. Reddie....	1,500 00
Port Simpson.....		Jas. Sharpe.....	100 00
Rykerts.....		J. C. Rykert.....	100 00
Rossland, B.C. (looked after by inspector at Paterson).....			
Seattle, Wash., c.o. Butler Hotel..		S. Reid.....	1,200 00
" c.o. Can. Customs.....		A. J. Armstrong.....	100 00
Stewart (Portland Canal).....	July 1, 1910	Wm. Millar.....	100 00
Union Bay, Vanc. Id.....	April 1, 1910	Geo. H. Roe.....	100 00
Upper Sumas.....		T. F. York.....	100 00
Vancouver.....	Sept. 8, 1908	J. H. Macgill.....	1,500 00
".....	Feb. 8, 1909	W. C. Hopkinson.....	1,200 00
".....	May 1, 1905	Thomas Elliott.....	1,200 00
Victoria.....	Sept. 12, 1904	Dr. G. L. Milne.....	2,750 00
".....	Feb. 16, 1907	Robert Roff.....	1,200 00
".....	Dec. 13, 1910	Jno. W. Speed.....	900 00
Waneta, address Ymir, B.C.....	June 10, 1910	A. C. O'Neill.....	1,000 00
".....		John P. Vroom.....	100 00
White Rock.....	April 20, 1909	J. C. Cornish.....	1,000 00
".....	March 1, 1907	A. E. Humphries.....	1,000 00

YUKON TERRITORY.

Forty Mile.....	Resigned.....		
White Pass.....		Geoffrey T. Butler.....	100 00

APPENDIX No. 1

FARMER DELEGATES sent to the British Isles and Europe, Fiscal Year 1909-10.

Name.	Residence in Canada.	Salary.	Expenses.
			\$ cts.
Irwin, Donald.	Lloydminster, Sask.	4 months at \$100 per month.	761 50
Munn, Fred A.	Kelliher, Sask.	3 " "	471 69
Anderson, Jas. L.	Clova, Sask.	2½ " "	342 89
Slater, Jas.	Moose Jaw, Sask.	3 " "	484 74
Tennant, Jas.	Kinistino, Sask.	3 " "	481 87
Gorrie, John.	Giroux, Man.	3 " "	420 98
Trayer, Benj.	Whitebrush, Alta.	3 " "	452 62
Bishop, W. S. V.	Regina, Sask.	3 " "	580 11
Barker, Marm.	Saltcoats, Alta.	3 " " and 20 days.	475 57
Smith, Avery	Saskatoon, Sask.	3 months at \$100 per month.	459 39
Akroyd, Rit.	Wainwright, Alta.	4 " "	590 08
Heathcote, Jos.	Kitscatty, Alta.	3 " "	567 72
Ottewell, J. G.	Fortunburg, Alta.	3 " "	417 58
Waddington, Ed.	Alameda, Alta.	4 " "	638 29
Forsyth, John.	Neepawa, Man.	3 " "	297 40
Davis, Chas.	Whitewood, Sask.	3 " "	335 74
Gamby, Alex. D.	Griswold, Man.	3 " "	453 82
McHugh, J. J.	Calgary, Alta.	3 " "	606 16
Deleau, Seb.	Deleau, Man.	3 " "	375 18
Creighton, W. O.	Westriver, N.S.	3 " "	350 87
Foster, F. W.	Kingston, N.S.	3 " "	511 26
Larcombe, S.	Birtle, Man.	3 " "	718 28
Cranston, David.	Ft. Sask, Alta.	2 " "	176 27
Kennedy, Thos.	Ulster, Alta.	4 " " and 26 days.	594 93
Winfield, Rev. J. A.	St. Stephen, N.B.	\$100 per month.	742 68
Enns, Jerard.	Rosthern, Sask.	4 4-30 months at \$100.	602 84
Turgeon, J. G.	Hardisty, Sask.	5 months at \$100.	885 47
Vanden, B. S.	Edmonton, Alta.	3 " "	490 91
Brewster, E. W.	Compton, Que.	4 " "	508 83
Aylesworth, G. A.	Newburgh, Ont.	4 " "	511 50
Curtiss, Jesse.	Brideport, Eng.	(Expenses only for 3 months).	150 08
Cameron, Agnes D.		4 months at \$200.	2,592 62
Steven, Alex.	Summerland, B.C.	2 months at \$100.	164 74
Little, N. W.	Heaton Moor, Alta.	1 month and 5 days at \$100.	86 99
McCowan, H. S.	Dunstable, Alta.	3 months at \$100.	115 11
Bardal, H. S.	Winnipeg, Man.	6 " "	1,143 43
Craigie, G. R.	St. John, N.B.	4 " "	277 98
Griffith, Wm.	" "	8 " "	1,613 84
Wilson, F. H.	Edmonton, Alta.	3 " "	179 49
Leslie, Archie	Camrose, Alta.	1 " "	nil.

(The above delegates were distributed by Mr. J. Obed. Smith, Assistant Superintendent of Emigration, London, Eng.)

1 GEORGE V, A. 1911

FARMER DELEGATES sent to the British Isles and Europe, Fiscal Year 1910-11.

Name.	Residence in Canada.		Salary.	Expenses.
			(From Dec. 1.)	\$ cts.
Wright, F. W.	Astwood,	Sask.	4 months at \$100 per month.	
Stephenson, Geo.	Paynter,	"	4 " "	
Douthwaite, Jos.	Eagle Hill,	Alta.	4 " "	
Yake, Hugh.	Moose Jaw,	Sask.	4 " "	
Ramsay, Peter.	Headlands,	"	4 " "	
Salloway, Benj. P.	Halcyonia,	"	4 " "	
Willoughby, R.	Wooglen,	Alta.	4 " "	
Brunskill, J. W.	Pense,	Sask.	4 " "	
Claibb, Geo.	Morris,	Man.	4 " "	
Peace, Matthew	Wadena,	Sask.	4 " "	
Butterfield, J. J.	Forster,	"	4 " "	
Collens, H. H.	Vermillion,	Alta.	4 " "	
Krengan, John.	Viking,	"	3 " "	
Vinnis, Geo.	Bunessan,	Ont.	4 " "	
Sampson, Hy.	Brandon,	Man.	4 " "	
Riddell, J. J.	Winnipeg,	"	4 " "	
Lyle, J. P.	Lloydminster,	Sask.	4 " "	
Lyall, Peter.	North Portal,	"	4 " "	
Oliver, Ed.	Moose Jaw,	"	6 " "	
Hosford, S. R.	Brandon,	Man.	\$75 per month	
Myers, C. C.	Ottawa,	Ont.	2 months at \$100 per month.	
Mercier, Geo.	Dumas,	Sask.	3 " "	
King, David.	Lethbridge,	Alta.		
Frederickson, F.	Winnipeg,	Man.	5 months at \$100 per month.	
Williams, John.	Melita,	Man.	6 " "	
McKenzie, P. H.	Lucknow,	Ont.	6 " "	
Bourke, Rev. T. E.	Kingston,	Ont.	4 " "	
Johnson, Chas. E.	Fillmore,	Sask.	4 " "	
Aylesworth, Geo. A.	Napanee,	Ont.		
Brewster, E. W.	Lennoxville,	Que.	5 months at \$100 per month.	
Chamberlain, R.	Toronto,	Ont.	3 " "	
Graham, Jos.				
Craigie, G. R.	St. John,	N.B.	4 months at \$100 per month.	
McLeod, David.			4 " "	
Winfield, Rev. J. A.			4 " "	
McLeod, A. D.	Storoway,	Sask.	4 " "	
Cameron, Agnes D.			\$250 per month.	
Gordon, George.	Oak Lake,	Man.	2 months at \$100 per month.	
Little, W. R.			3 " "	
Sutcliffe, Peter.			2 " "	
Aime, Char.	Emerson,	Man.	2 " "	

(The above delegates were distributed by Mr. J. Obed Smith, Assistant Superintendent of Emigration, London, Eng.)

APPENDIX
TO THE
PRECEDING REPORT

INTERIM REPORTS.

FIRST REPORT.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their First Report:—

Your Committee recommend that the following evidence, taken by them during the current session of Parliament, be printed forthwith in separate pamphlet forms, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report:—

1. Twenty thousand (20,000) copies of the evidence of Dr. William Saunders, Director of Dominion Experimental Farms, for distribution as follows:—17,000 copies to members of Parliament, 800 copies to witness, 1,500 copies to Department of Agriculture and 100 copies to the use of Committee.

2. Forty thousand (40,000) copies of the evidence of Mr. J. H. Grisdale, Dominion Agriculturist, for distribution as follows:—37,000 copies to members of Parliament, 800 copies to witness, 2,000 copies to Department of Agriculture, and 200 copies to the use of Committee.

All of which is respectfully submitted.

M. S. SCHELL,
Chairman

HOUSE OF COMMONS,

January 26, 1911.

SECOND REPORT.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their Second Report:—

Your Committee recommend that the following evidence, taken by them during the current session of Parliament, be printed forthwith in separate pamphlet forms, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report:—

1. Twenty thousand (20,000) copies of the evidence of Mr. James E. Johnson, of Simcoe, Ontario, for distribution as follows:—18,200 copies to members of Parliament, 1,500 copies to Department of Agriculture, and 300 copies to the use of Committee.

2. Twenty thousand (20,000) copies of the evidence of Mr. A. G. Gilbert, Poultry Manager, Central Experimental Farm, for distribution as follows:—17,900 copies to members of Parliament, 400 copies to witness, 1,500 copies to Department of Agriculture, and 200 copies to the use of Committee.

All of which is respectfully submitted.

M. S. SCHELL,
Chairman.

HOUSE OF COMMONS,

February 9, 1911.

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THIRD REPORT.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their Third Report:—

Your Committee recommend that Forty thousand (40,000) copies of the evidence of Mr. A. G. Gilbert, Poultry Manager, Central Experimental Farm, given before the Committee on Wednesday, February 22, 1911, be printed forthwith in pamphlet form, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report, for distribution as follows:—37,000 copies to members of Parliament, 2,000 copies to Department of Agriculture, 800 copies to witness, and 200 copies to the use of Committee.

All of which is respectfully submitted.

M. S. SCHELL,
Chairman.

HOUSE OF COMMONS,
February 23, 1911

FOURTH REPORT.

The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their Fourth Report:—

Your Committee recommend that Forty thousand (40,000) copies of the evidence of Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, Department of Agriculture, given before the Committee this session, be printed forthwith in pamphlet form, in the usual numerical proportions of English and French, as advance sheets of the Committee's final report, for distribution as follows:—

36,600 copies to members of Parliament, 2,000 copies to Department of Agriculture, 1,200 copies to witness, and 200 copies to the use of Committee.

All of which is respectfully submitted.

M. S. SCHELL,
Chairman.

HOUSE OF COMMONS,
March 8, 1911.

FIFTH REPORT.

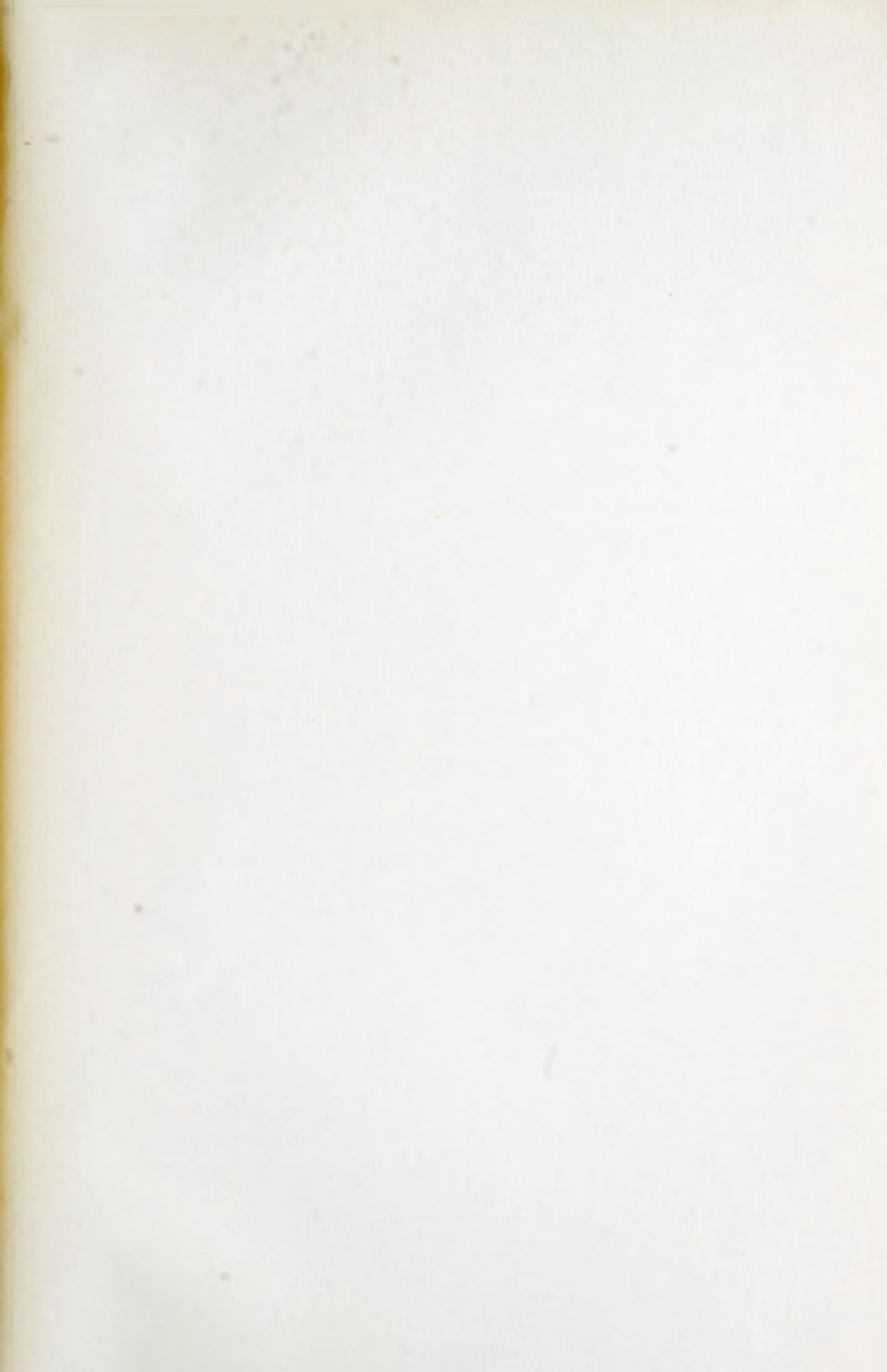
The Select Standing Committee on Agriculture and Colonization beg leave to present the following as their Fifth Report:—

Your Committee have had under consideration Bill No. 157, An Act respecting the Inspection and Sale of Seeds, and have agreed to report the same with amendments.

All of which is respectfully submitted.

M. S. SCHELL,
Chairman.

HOUSE OF COMMONS,
April 6, 1911.





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